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EXTRACT

From an Act prescribing Rules for the Government of the State Library, passed March 8th, 1861.

SECTION 11. The Librarian shall cause to be kept a register of all books issued and returned; and all books taken by the members of the Legislature, or its officers, shall be returned at the close of the session. If any person injure or fail to return any book taken from the Library, he shall forfeit and pay to the Librarian, for the benefit of the Library, three times the value thereof; and before the Controller shall issue his warrant in favor of any member or officer of the Legislature, or of this State, for his per diem, allowance, or salary, he shall be satisfied that such member or officer has returned all books taken out of the Library by him, and has settled all accounts for injuring such books or otherwise.

SEC. 15. Books may be taken from the Library by the members of the Legislature and its officers during the session of the same, and at any time by the Governor and the officers of the Executive Department of this State who are required to keep their offices at the seat of government, the Justices of the Supreme Court, the Attorney-General and the Trustees of the Library.

DICKERSON'S PATENT SELF-REGULATING WIND WHEEL.

THE CALIFORNIA CULTURIST.

JULY, 1860.

SILK CULTURE IN CALIFORNIA.

FROM a very remote period in the world's history, silks and their fabrics have ever maintained the first rank among fibril manufactures for beauty, elegance and commercial value. The geographical extent of the countries of the old world, favorable to silk production, is so limited, and the demand for its fabrics so world-wide, that its importance to the commercial and domestic economy of those provinces where it forms a staple production, can hardly be over-estimated.

We propose to present a few facts relative to the production and manufacture of silk, as well as to show the perfect adaptation of our own climate and soil, and our condition as a people, for its successful culture and manufacture. We have no mulberry trees to sell, or *morus multicaulus* speculation to promote. We would hope, therefore, to escape all suspicion of a sinister motive, in urging the subject upon the attention of our readers, and the agriculturists of California. As introductory to what we may say upon the subject, we extract from a late number of *Harper's Magazine* the following, in relation to the early history and progress of silk culture, its present condition, and particularly its future prospects in those countries where its culture has heretofore been a success, as in no small degree corroborative of the position we assume—that California possesses superior advantages of soil and climate for the production of the raw material, and will speedily possess facilities for manufacture, unequalled by any other country.

"Some years ago, men were bitten by a mania—this is of periodical occurrence, unfortunately for us—for planting the mulberry tree. How did it end? The fever burned out. Men went into the speculation, not to increase the silk trade, thereby making another outlet of industry for the poor and helpless, and increasing the exports of commerce, but to make fortunes, and grow rapidly rich by the sale of the trees.

How they were used or abused were matters of a secondary consideration to them; profit for the few at the expense of the mass—the nerve of every speculation—being the motive power. So that when nothing more was to be made by the selling of trees, or the patenting of hurdles, cradles, and powders, 'the culture of silk' passed away like a vapor over the hills, and men turned about to look for another object of speculation. Verily the sentiment of 'after us the deluge' is as well understood, though not as honestly confessed, by the American as the Austrian. But Providence has sustained us here as in all things. The mulberry trees all over the country have grown and multiplied, and we shall soon be ready to begin that which the next century will find us doing with all our might: commanding the silk as we now do the cotton markets of the world.

"It is merely a question of time. As certainly as the seasons come round we are slowly, but surely approaching the great result. The statesmen of France, from Sully to Louis Napoleon, have pondered, watched, and now tremble for the issue of this question. The deep and serious apprehensions which are held by the English, concerning cotton, are felt ten-fold more anxiously by the French, in relation to their silk culture. Not a meeting of the academy takes place, but a paper, relative to the subject, is read and discussed. Every effort is being made to introduce other moths whose food is not so precarious as the mulberry. No expense is spared in experiments. Every suggestion is hailed and tried. Scientific men watch and study; but all in vain—the silken thread is slowly, but surely following the sun. It must be caught up by our Middle and Southern states, or before many of the present generation have passed away, our wives may receive the same answer Aurelian gave his Empress, who asked 'to have a single shawl of purple silk.' 'Far be it from us,' he replied, 'to permit thread to be reckoned worth its weight in gold'—at that period silk sold weight for weight.

"To fully understand our own position relative to the silk culture, let us go back to the ages when it is first mentioned, and see how gradually it has crept on and on. By thus tracing its course through the past, we may see what the future will produce.

"That silk was known at a very early period all authors are agreed; although no mention is made of it in the Old Testament, and it is named but once in the New Testament. In the French version of the Chinese treatises, by Mr. Stanislaus Julien, translated and published in 1838, at Washington, bearing the title of 'Summary of the principal Chinese treatises upon the culture of the mulberry and the rearing of silk-worms,' we read that 'the lawful wife of the Emperor Hoangti, named Siching-chi, began the culture of silk in 2602, before our era, more than 4447 years ago.' This will do for a beginning; let us feel no curiosity to go farther into the mist of ages. Compared with this, Aristotle is a modern in his evidence of the use of silk. It is mentioned by almost all the Greek and Roman authors. Heliogabalus was the first Roman who wore cloth made of silk *alone;* and Lampridius mentions that 'he had prepared a silken rope of purple and scarlet colors to hang himself with.' The use of silks pread very rapidly after this example. A. D. 530 we find Justinian rewarding two monks at Constantinople, for bringing to him from

Persia, in the hollow of a cane, some eggs of the silk-worm. These hatched in due time, and their management was taught by these monks, so that it was not long before the Romans produced their own raw silk. In 658, Benedict, first Abbot of Wearmouth, bought land for his abbey, from two families on the river Wear, for two scarfs, or palls of silk.

"In 1140, Roger I, king of Sicily, having taken the cities of Corinth, Thebes and Athens, got into his hands a number of silk-weavers, whom he carried off, with their instruments and materials, and forced them to become residents of Palermo. Twenty years from this time, the silks of Sicily had become celebrated all over the world,* and its manufacture had been introduced through every province of Italy, and flourished at Almeria, in Granada, in Spain.

"In the early part of the fourteenth century, the weavers, being expelled from Succa, carried the manufacture of silk to Venice, Florence, Milan, Bolona. From thence its transition to France, Germany, and England was quite easy. The *use* of the silk cloth had been known in these countries as early as the sixth century. The kings of Denmark began to use silk to append their waxen seals to charters about A. D. 1000.

"James the First, of England, learned the value of silk before he left Scotland for his new throne, having been obliged to borrow a pair of silk stockings from the Earl of Mar, that he might receive with due pomp the English embassadors. This experience no doubt increased his desire to cultivate silk in England and her colonies. He wrote a book on the subject for the instruction of his royal people, the Virginians, who had the honor, it is said, of providing the silk for the coronation robes of Charles the Second. Bounties were offered in England as early as 1623.

"In 1714, the manufacture of silk was commenced at Derby, in England, by Sir Thomas Lombe, who went to Italy and obtained a knowledge of the business; and is supposed to have lost his life by poison from the jealousy of the Italians, at his discovering their mode of weaving and dyeing. He died at the early age of twenty-nine.

"In 1732, lands were granted to Georgia on condition of planting one hundred white mulberry trees on every ten acres of cleared land; and in 1759, just a century ago, this fine, promising colony exported to England 10,000 pounds of raw silk. When cotton was introduced, the silk culture declined rapidly, and the last exportation was made in 1790. It was only a few years ago that the large and roomy filature in the center of the city of Savannah, which had been used as a hotel, and which covered almost a whole block, was pulled down.

"In 1760, Connecticut commenced the silk business, and most wisely continues it to this day. A little more impetus given the farmers in prizes from the State Agricultural Society, would make it a most flourishing and important branch of industry in that state.

"In 1771, Pennsylvania and New Jersey commenced the culture of silk, and

* Gibbon's "Decline and Fall."

continued it to the Revolution. Since then it has never been resumed. These are only a few mile-stones running along the centuries, by which your attention can be fixed to points worthy of your future consideration.

"A perusal of the history and statistics of the silk trade for the last half century, will prove to any reader that the fears of the French and Italians, about the gradual, but sure decline of the silk culture in those countries are not without reason. For forty years, notwithstanding the persistent spread of the mulberry and the worm—until the former is now planted upon the steep sides of the Lebanon, through Syria, along the whole Mediterranean coast—the increased production of raw silk has been by no means commensurate with the labor and expense incurred. 'Short crops' is the constant cry.

"Let us retrace our steps and take a geographical view of the production of silk. It was first obtained by the different nations bordering on the Mediteranean, from the Seres—a people who inhabited Khotan, in Little Bucharia, a province in the north of India. It crept down through centuries past to Bactria, to Persia, through Arabia to Byzantium, or Constantinople, whence Justinian transplanted it to the island of Cos. From this time history gives us ample information. In an old book, written by Isodore, of Seville, about A. D. 575, there is an explanation of terms used etymologically for silk. 'Bombyx—a worm which lives upon the leaves of trees, and from whose web silk is made. It is called Bombyx because it emptics itself in producing threads, and nothing but air remains within it. The cloth called Bombycina derives its name from the silk-worm, *(Bombyx)* which emits very long threads. The web woven from them is called Bombycinum, and is made in the island of Cos. That called Serica derives its name from silk, *(sericum)* or from the circumstance that it was first obtained from the Seres. Holo-serica is all of silk, for Holan means all. Tramo-serica has a warp of linen and a woof *(trama)* of Silk.' This quotation is well worth our attention, as an exposition of the state of trade or manufactures at this early day. In all the languages of Europe, from the first period of their use, you will find a word by which silk is understood; in no tongue is it found missing—which shows how early mankind placed a value upon this production. Serinda is the name of the country from whence came 'the fleece of the Serer.' Authors have disputed whether it is the same as Khotan, in Little Bucharia. Latreille sums up the matter thus: 'The city of Tarfan, in Little Bucharia, was for a long time the rendezvous of the caravans coming from the West, and the principal market for Chinese silks. It was the metropolis of the Seres of upper Asia, or the Serica of Ptolemy.'

"The French obtained several workmen from Milan and commenced the silk manufacture in 1521, but with no success. In 1564, Trancot, a gardener at Nismes, planted the first nursery of white mulberry trees, and in a few years they became propagated through the southern provinces of France. In Dauphiny great efforts had been made by some noblemen returning from the conquest of Naples, who brought with them both mulberry and worms; but signal failure attended their efforts, and doubtless little progress ever would have been made if Sully, with his far-reaching

policy, had not impressed its importance on the mind of his master, Henry the Fourth, and forced the nation into appreciating its immense results. No one can calculate the wonderful resources—the revenue—the finding of pleasant work for the poor and helpless—the keeping of men busy, and consequently quiet, thus encouraging peace and content, that this little worm has conferred upon so volatile and restless a nation as the French. Therefore, its rulers are wise in casting about how, and by what means, its continuance can be made permanent.

"But men cannot regulate the seasons; and as the climate of France and Italy changes through some cause which we cannot even divine, so the manufacture of silk from the *Bombyx mori* must, notwithstanding every effort, gradually decrease in those countries. You no longer find the former long continuance of dry, sunny weather; the seasons are becomming colder; rain is more constant and dampness follows. The vine on the once sunny slopes cannot struggle against it, and the mulberry loses, year by year, more of its healthful vitality.

"This tree is a marvel of itself. A mysterious current forms its life-blood. Every other known tree has its hundreds of insects feeding, living, dying upon it; but the mulberry has but one. The moth lives alone for the tree, and the tree for the moth. Wherever it is planted it exhausts the earth most completely; all its energies are thrown into the soil, and the atmosphere is drawn into it by its millions of broad lungs, in a manner corresponding with its growth. The variety of gases in this tree surpasses every other. A mulberry tree growing in the sun, and another in the shade are two vitally different trees. Worms fed on the latter sicken and die; while those who feed on the well-sunned leaves are easily carried through all their various changes, and are very productive. We know that when the sun strikes any leaf, it exhales the air used by animal life for respiration, and we know that the quantity exhaled is apportioned entirely to the strength of the light which draws it. Consequently, when rain, dampness, and the absence of the sun are combined, little of this air can be exhaled, and animal life must suffer. With the mulberry this is more the case than with any other tree. Count Dondolo, in his excellent treatise on the silk-worm, says: 'If some mulberry leaves are placed in a wide-mouthed bottle, and exposed to the sun for an hour or more, according to the intensity of heat, and if you then reverse the bottle and put in a lighted taper, it (the taper) will burn with a brighter, *whiter*, and larger light than if it were placed in a bottle filled only with common atmospheric air. Also, on the inside of the bottle containing these leaves, in a short time you will find drops of water evaporated from the leaves by the heat. The leaves become withered and dry, according to the quantity of liquid they have lost. Now, take another empty bottle, place in it some mulberry leaves, cork it, and place it in the dark in a box, or wrapped up so that no light can reach it. After two hours open it; put in a lighted taper or a small bird: the taper will go out, and the bird will expire in a second. This demonstrates that in darkness, the leaves have exhaled mephitic air; whereas in the sun, they have exhaled vital air.'

"Thus, we may perceive how the long, rainy seasons in France will gradually destroy the nutritive qualities of the leaves, and cause the worm to die from the

deleteriousness of the gas of the leaf upon which it feeds. This being the case, others whose climate answers for both must adopt them.

"In this country we can raise both worm and tree; and the sooner the business is commenced, the greater the success and profit. In the whole of China there are only parts of four provinces which produce the fine silk; Che-kiang, Kiangnan, Woopé, and Szechuen. The first is crossed by the thirtieth deg. of latitude, and corresponds in climate, soil and rivers with our Middle and Southern states. Experience has shown that no finer silk country exists in the world than Georgia; and the surrounding states must be equally as well fitted. The raising of the worm is a nominal affair in England. There it can never thrive, for the same reason which is now causing its decay and death in France: *the want of a sufficiency of sun heat to ripen the leaves, rendering them free from injurious gases and nutritive to the worm.*"

Admitting the foregoing view of the subject to be in the main correct, as regards the growing deleterious effects of climate upon the silk culture of the old countries, producing an annually increasing want of the raw material, as compared with the increased demand for manufactured fabrics, with little or no hope for a change of climate in those countries for the better, may we not reasonably look to California, with her dry, warm, equable climate and fertile soil, as the world's great field for silk culture? It is next to needless to say anything, to one who has given any thought to the subject, of the perfect adaptation of our soils and climates to the growth of the mulberry; for we have every variety of both, that can be found in any country. Of the first, we have millions of acres; whilst there is no fear that our climates will be changed in any appreciable degree, so long as they are completely controlled as now, by the great wind currents of the ocean, rather than of the land.

The entire of our great system of inland plains and valleys, lying between the coast and Nevada ranges of mountains, are admirably adapted, from their dryness and the steady heat of their atmosphere during summer, to the propagation, health and successful growth of the silk-worm, and, as a sequence, the quantity and quality of the silk they produce; as the greatest drawback, incident to their culture in all countries, is known to be the rain storms, of two or three days duration, that occur during their feeding time. But in California, the entire season of feeding might reasonably be expected to pass, without the worms being chilled by the damp, cold atmosphere of a single rain storm. As regards climate, then, there is no other country on earth superior to California, for rearing the silk-worm, provided the proper food can be secured.

Upon the question of food, we have shown in our extract from *Harper's Magazine* —and which is corroborated by every treatise on the silk-worm and its food, extant— that the leaves of a mulberry grown under a brilliant sunshine, are a greatly superior food, both as regards the health of the worms fed upon them, and the quantity and quality of the silk produced; as a single rain storm, or a single feeding of wet leaves, is exceedingly detrimental to the silk crop. In this regard, then, our climate greatly excels even the most favored of the Atlantic states, as well as most of the countries of Europe. But we would offer another suggestion in reference to the

growth of the mulberry in California: it is a perfectly hardy tree—we refer to the white Italian variety, so extensively cultivated in Connecticut, and a few other silk growing localities in the Atlantic states—it is a gross feeder, sending its roots in great profusion in all directions, and will withstand the severest drought uninjured, and as its growth is that of a low, spreading habit, and tenacious of life under the severest mal-treatment, it is one of the best trees that could be chosen for the growth of a breaker or barrier in localities subject to strong gales of wind. When properly planted out, and cut in during the early stages of its growth, it makes a compact, firm hedge, for which, but few trees are superior.

In Italy, large numbers of silk-worms are reared, by allowing the worms to roam over the tree or hedge at will in the open air, with no protection from rains or the depredations of birds. In this way, the worms collect their own food, from or after the first four or five days from the eggs. A large quantity of silk is thus produced with very little trouble; but of an inferior quality, in consequence of the not unfrequent, though gentle rains. In California, the worms would undoubtedly succeed admirably in the open air, upon compact hedges—the scarcity of birds to prey upon them, and the almost total absence of rain during the feeding season, would be greatly in their favor. The only thing that we should fear as regards an out-door culture, would be the coldness of our nights, which prevails throughout California, even in summer: our fears, however, in this regard, may not be well grounded. We believe then, if there is ought to be adduced unfavorable to a successful silk culture in California, it will be found to be the present high prices of labor; but even this bar to the silk culture must inevitably, rapidly disappear. The present immense influx of the Mongolian race to our labor grounds, and which must inevitably continue to increase, will as assuredly bring down the prices of labor in every department in which their skill can be made available. The Chinese excel in all that pertains to the growth and culture of the silk-worm, and are skilled in the manufacture of the silken fabrics. In view, then, of the continued attempts to drive the Chinese from the mines, that they may not, with their low-priced labor, compete with the white laborer, would it not be well to provide a field for their occupancy, in a branch of industry in which they are perfectly familiar and peculiarly adapted, and yet, one against which no white laborer can bring a single plausible argument? We believe a no very distant future will find California, peculiarly a wine, wool and silk-producing country, as it now is of gold, grains, fruits and cattle. W.

GOOSEBERRY CULTURE.—We have noticed in many of the little patches of ground surrounding the buildings on the hill-sides in this city, that the gooseberry bears abundantly. This is a great relief to housekeepers, as this fruit is one of the most agreeable for culinary purposes, and can be used from the time it is half grown until fully ripened. We know a prudent housewife who has put up in sealed jars, a sufficient quantity to serve through the year—all the produce of a few bushes.

COMPARISONS OF CALIFORNIA.

UPON the occupation of California by the Americans, there was found but a limited culitvation of the soil, and that of a rude and semi-barbarian character. Even the old missions retained only the moldering outlines of a former husbandry, which had been operated by a multitude of savages, impressed into a servitude unsuited to their habits of life, and held in durance by the power of superstition, the creation of the surplice and mitre. Indeed, those immense piles of tile-covered, adobe buildings, with embattlements and towers, through whose embrasures glistened the destructive arms of civilized warfare, became at once the means of subjecting to a state of vassalage hordes of aborigines who peopled this part of the continent. In no part of the world's history is there presented a more sublime story of conquest, than would be contained in a simple narrative of the privations, self-sacrifices, courage and tenacity of purpose displayed in the actions of the Catholic Missionaries of California. If we go back to sacred history for a parallel, we find only one approaching it in romance. Nor can the march of the children of Israel through the wilderness, and their ultimate occupation of the land of Canaan, be regarded as approximate, because theirs was an exodus of an entire people, with its household trains, pioneered by "an army with banners." The Hebrew hegira was merely a change of domicile, of bondman to free; he saw a land "flowing with milk and honey," where flourished cities and hamlets; he had but to exterminate—to drive out and occupy that which had been reared. He found ready for his hand, ripening corn fields, and his triumph was made joyous by the nourishing juices which ran purple from the wine-press. The obstacles which the Jews had to encounter in the conquest of the promised land, were physical, rather than mental. Their inroad was upon a people of cotemporary existence, who, from the dawn of creation, held periodical intercourse, and adopted customs, though widely dissimilar, yet derived from a common ancestry. In their flight from Egypt, they seem to have been influenced by none of those careful considerations—the result of mental forethought, which provide for great emergencies; nor can there be discovered any heroic courage in the execution of their resolves to terminate their bondage to the Egyptians, which had become unbearable. They took no thought of servile insurrection; the exasperation of him who conceived himself wrongly held to the service of another, found no vent in blood marks—their shackles dropped stainless of life's crimson stream.

From the time of their flight from Egypt, they seemed to have no distinct purpose in view; they took no thought of the morrow. When their farther progress was arrested by the surf which beat upon the rocky shores, and rolled back into the dark bosom of the Red sea, yawning destruction in front, they gave no signs of panic, as the hosts of Pharioh pressed upon their rear, and their capture and return to bondage became eminent. In this crisis, the battalions of Israel made no preparations for battle; they awaited the decree of Omnipotence with the despair and courage of fatalism.

Not so with the early fathers who founded the missions and effected the conquest

of California. Natives of Spain, educated at a time when Spanish conquest was overrunning both of the newly discovered continents, and imbued with the adventurous spirit and ambition of the times, but endowed with a morality which led them to shun the various expeditions which had deluged Peru and Mexico with the blood of its native inhabitants, the priests who turned their course towards California were of a different class from those who shared the glories and perils of Pizarro, proselyting with fire and the sword, rather than through the plaintive story of the meek and humble Nazarite.

On the advent of the Padres into California, there was found little of the characteristics of the previously explored and conquered province of the New World. It was yet an unknown region, long after South and North America had become peopled with the new race of man, and its accompanying civilization. For more than a century anterior to this time, rumor had invested this land with repulsive images, suitable to the most diabolical imagination, and fastened upon it its present inappropriate name, which, literately translated, means *heated furnace.* It was said that the country was peopled with a race of men, more than savage in their character, hideous in aspect, and invulnerable in battle. Why such a field of adventure should have been neglected for more than a century, during the culmination of Spanish power, has never been satisfactorily accounted for. The strange rumors alluded to, certainly presented that charm which would seem to have attracted the danger-seeking adventurers of the heroic period of the middle ages; yet it was reserved for a few priests, whose quiet and unobtrusive lives had been mostly spent in the seclusion of the cloister, to plan and carry into execution the conquest of a vast region, the very name of which had been a dread through long years, and its geography a sealed book to the civilized world.

Unaccompanied by the panoply of arms, unaided by the counsel of princes or the treasures of kingdoms, a small old ship which had long been rotting in one of the seldom-visited ports of the Pacific, was sufficient to carry those who took little beside their scrip and staff, for the conquest of a vast and unknown country. Among these priests were those who had mastered art and science, and became abstruse philosophers in the ethics of cause and effect; they abhorred the rule of the sword, which, up to this period, had directed the laws of nations, and written its bloody code through the aphorism that "might makes right." As yet, no experiment, on an enlarged scale, had been tried to subject the savage to civilized life, except by coercion. It was the mission of these humble priests to make a trial of the efficacy of christianity. How they succeeded will yet be written in language that shall portray in glowing colors, the axiom that peace also has her heroes and conquests.

On landing in California, the first object of the priests was to plant seeds, and produce articles of food which were calculated to please the tastes of the natives. In this manner, they gradually secured their labor for the cultivation of the soil. The Padres had learned in other lands, a rare knowledge of the motives of men, and saw that human nature presented similar traits, whether in civilized or savage life. They could divine why a "man with nothing in his stomach is fit for treason, stratagems and

spoils," and provided abundantly for the support of the increasing numbers of Indians who rapidly gathered around the missions. The policy of the Padres was strictly a defensive one, trusting to time for proselyting individuals, or tribes of hostile dispositions.

In this manner, and in no long time, a chain of mission stations was established over a large extent of territory, and great numbers of Indians brought under subjection to church discipline. The christianization of the Indians seems to have been a prominent desire on the part of the priests, as this afforded the completest subjection of the savage to the will of the superior caste. This was a matter of easy accomplishment, as the aborigines were found of a docile disposition, and possessed of a superstitious turn of mind, which made them regard things of a spiritual character subjects of worship, rather than material objects. Thus, adoration of the sun, and the imaginary contemplation of the evergreen hunting lands of the unknown hereafter, found the simple red man all over the western hemisphere, intuitive subjects to receive the ideal of christianity.

The fascinating ritual and mysterious incantations of the priests had a magic effect upon the minds of the simple Indians; and it was an easy matter for them to acquire the most absolute control over the rude and ignorant population gathered from the wilderness. Adopting the customs of the savages, so far as they could be made conformable to christian regulations, the Padres avoided the difficulties which had been met in those countries where the European had attempted, at one blow, to sweep away every vestige of Indian usage, thereby instituting an irrepressible conflict, which ended in the total destruction of the feebler race. Thus, while they permitted the continuance of rude customs, they built upon them the superstitions of a religion which was absolute and arbitrary in its exactions. In this manner, vast bodies of savages were brought under subjection to the priests, and were made to perform the severest labors. We look with astonishment at the immense piles of buildings now crumbling in ruins; but which, at an early day of the conquest, reared their stately walls with more than regal magnificence in the isolated plateaus of the interior.

Unaided by mechanism, with rude implements, in ruder hands, but under the direction of the most accomplished scholars of the age, dams were thrown across rivers, from which aqueducts conveyed great volumes of water many leagues, through mountain defiles, to the mission stations, for purposes of irrigation. Orchards of rarest fruits, and vineyards were planted everywhere, and fields rudely tilled with implements which merely scratched the ground, produced, under the copious artificial irrigation given them, a supply of grain for domestic uses; but the principal occupation was of a pastoral character. Flocks and herds increased with wonderful rapidity, and it was found an employment admirably adapted to the capacity and inclination of the christianized Indians. The mission establishments had grown to gigantic proportions under the care of their founders, and although great numbers of Indians had pined under the transition from savage to civilized life, it was judged that their rapid decline in numbers was owing more to divine visitation than the exactions of their task-masters.

Unaided by the government, and unprotected by its military arm, the Padres had made a conquest of the country, and were rapidly acquiring wealth and power.—This could not escape the cupidity of Spain, which, unasked, sent its legions of profligate soldiery to occupy the country. Thence sprang up the settlements called Pueblos, from which spread over the land the infectious vices of civilization. With the advent of the army there came also a new recruit of the ecclesiastics, to fill the places of those long here, but rapidly passing away from the theatre of life. For a time there was a clashing between the military and ecclesiastic power, each claiming superiority. The consequences were that each became demoralized and corrupted by a contest which was characterized by an inhuman rapacity on the part of the military, which met frequent checks by the superior strategy of the clerical. As might have been foreseen, the result of this state of things was to produce insubordination among the Indians, to such an extent that the cultivation of the lands was neglected, and the herds were allowed to perish from starvation, because they were not dispersed during seasons of drought to districts where there was ample forage.

Thus from bad to worse California made a speedy retrograde, its population rapidly declining, and its former splendors passing away. Such was the condition of the country during its first epoch. Its second was marked by the American conquest, which has fanned a more intense blaze among the mystic fires of nations than ever gleamed from Aladdin's lamp.

The first epoch of California history has passed into the dim obscurity of the past. Its glory and shame is yet to be dragged from the sands of time, which are ever drifting deeper upon it; its shades of light and darkness are yet to be painted in colors which shall vie in attractiveness with the legends of the crusaders. Its footprints are not seen on the age in which its drama was enacted. Its isolation gave it immunity from the innovations and progressive changes made in material knowledge in other parts of the world during three-quarters of a century, and affords an apt illustration of the fickle tenure of that power which seeks to control the secular affairs of men by the ideal rather than the practical.

The second epoch of California history has already been inaugurated, and the transfer of peoples, actuated by magnetic principles, to this slumbering arena, presents the startling contrast between now and then. The gang plow has taken the place of the rude stick which merely scratched the surface soil. The reaper sweeps its quarter section while the machette, in savage hands, could strike down a shook. The threshing machine has sacked a ship's cargo of pearly grain long ere the scurry of wild mustangs suffices to trample into dust and filth a few fanegas in the circling corral.

All the customs of the old Californians have disappeared except stock growing, and we deeply regret that the practices of the country in this large branch of industry should have been so largely adopted by the Anglo-American settlers. It is this which has given us the opprobious epithet of a "stock-starving state."

Formerly the herds grazed in the valleys during the summer, the hills being reserved for winter pasturage. By these provisions there were no losses on account of forage, except during a succession of seasons of unusual drought. But it must

be borne in mind that our best valleys are now under cultivation, and that our herds eat up, during summer, that supply of the hills formerly kept in reserve for winter. The consequences are that most of our stock shrink for want of food during the inclement season, or perish. We will state as an estimate, that there are one million of cattle in the state, worth, in September, twenty dollars per head, or an aggregate of twenty millions of dollars. It is a low estimate to state that by the first of February they will lose, by shrinkage in weight, one-third, to say nothing of large total losses by death. One-third of twenty is six millions, six hundred and sixty-six thousand dollars less than the cattle were worth four months previous. Has not this a great deal to do with the disaster which is overwhelming the business of stock raising in California? Hybernating animals, such as the bear, raccoon, and woodchuck, are provided by nature in the fall with an excess of fat, which is consumed during their torpid state in the winter, to give off animal heat to sustain life; yet with all this they come out "spring poor" at the approach of warm weather.

Now, cattle, horses and sheep are not hybernating animals. They cannot remain torpid through a season when there are no natural supplies of food. They are subject to habits of locomotion at all seasons, and the laws of reproduction most naturally fix their period of maternation during the winter. Thus it is obvious that there will serious consequences result to the dam from her enfeebled condition; nor can the offspring possess those qualities desirable by the owner. The true remedy for this is to cultivate improved kinds of grasses; to have less grain, and more hay farms, and better breeds of stock. F.

HOW FARMING DID NOT PAY.

THIS has been a mooted question time out of mind, and we suppose it will continue to be as long as there shall prevail such a disposition among our people to change from one occupation to another, regardless of those prudential considerations which should lead them to inquire whether they possess the requisites to success in the newly proposed undertaking.

It is an unfortunate characteristic of the American people to suddenly abandon enterprises which have involved their utmost pecuniary resources, and absorbed the unweary devotion of physical and mental labor for years. Indeed, it often happens that this is done at times of reasonable prosperity, merely because there is a fancied reverse impending in the future, or that some new and startling enterprise is having a run, into which, it is seen, our people are prone to rush at a two-forty speed, taking thought only not to be distanced in the race, and never once seeming to care whether its termination was in a slough, so that the crash ended in a sensation.

We believe that most of the reverses which have overtaken our people, are chargeable to their lack of fortitude under adversity. However prosperous may have been any branch of industrial life, it no sooner reaches a position where it

becomes steadily remunerative, than it will be discovered that an overproduction is about to take place, because there were too many engaged in the business. Then commences a panic and disastrous retreat, only terminating when its dust shall have cleared away, so that the fugitives may look behind them, unable to discover a reasonable cause for their late trepidation.

Now, if our people are subject to panic manias, they agree with Barnaby Rudge's rook, they "never say die;" and no sooner are they out of the frying pan than they can be seen squirming in the fire. They no sooner have abandoned a disastrous enterprise, than they will be found heels over head in others doubly wild. This illustrates that elasticity of character which can be appalled by no misfortune, however sudden and total. It unmistakeably evidences the wonderful recuperative opportunities afforded all over the American continent, to those who have willing hands to work, or minds capable of directing.

We do not wish to be understood as asserting that, as a class, the Americans are subject to these periodical changes of occupation and their legitimate results, indifferent success; but that it is a prominent feature of Anglo-American life. Its most noticeable theater of action is to be seen in commercial circles, as they are most directly connected with the monetary system, upon which all departments of industrial life are based.

Commerce, like the bosom of the great seas, is subject to the tornado—self-created by natural causes—and the many wrecks which mark its pathway are crafts which carried an excess of sail, under unskilled and panic-stricken pilots. Viewed from a headland, we are apt to think it is a fearful storm which has swept down those ships, lately so grand and majestic; and we apprehend, from the present surroundings, that these disasters extend to remote quarters, and we only become acquainted with the real condition of matters when the storm shall have somewhat lulled, so that we can perceive, amid the lifting clouds, those unpretending craft which are nobly breasting the surf, having rode out the gale because there were at the helm captains of experience, who never spread so much canvass but they can take it in before being cast upon their beam-ends by the squall.

Thus has been obtained that figurative expression used as an admonishment, and applicable to all conditions of life: "don't carry too much sail." This axiom has much to do with the question, seldom mooted, only where metropolitan life has immediate contact, as to why farming does not pay. Nor should it be an admitted proposition, where farming is conducted legitimately. We often hear the expression "farming don't pay," and when we inquire into the practices of those using it, we find they are no relation of Wiseman, whom we spoke of in our last number; neither are they acquainted with the Slacks. Wiseman never doubted but what farming would pay, and it has amply rewarded him, even in seasons which proved disastrous to others; and as to farmer Slack, he manages somehow to meet ends, because if he has had bad crops the young Slacks go longer barefooted, and more ragged than usual. Mrs. Slack, too, is cut off of "store fixins," and it is gratifying to notice that old Slack himself pays fewer visits to the "grocery" at the cross-roads. To our

mind, Slack gains by his inability to make deposits in the cross-roads savings bank; although we think if he had husbanded some of the proceeds of a previous good crop, it would be somewhat to the advantage of Mrs. and the junior Slacks. Like Wiseman, Slack never was known to say that farming did not pay. He is a farmer by intuition and the habits of a life-time; he attributes the production of good or bad crops to Providence, and there lets the responsibility rest.

Those who are continually inquiring—does farming pay?—are the Pitchins, an American family, more numerous than all the Browns, Smiths, Blacks and Whites put together. Pitchin has just emerged from a commercial disaster, which has left him little of a previous successful speculation, and has concluded that the old business of farming, which he partially learned when a boy, is, after all, the very thing to fall back on in these days of broken credit and limited resources. So Pitchin looks up a farm eligibly situated near the city, because Mrs. Pitchin and the daughters can, by this means, still continue to enjoy some fragments of society. He half convinces them that this rural residence is a *villa*, and the idea is romantically persuasive. It saves the sorry conviction that one is to be *buried* in the "stupid country." So the Pitchins pack up, and move out to their country seat. As before said, it is eligibly situated, and has an extensive system of half-finished and costly improvements.—Pitchin bought the place of a man by the name of Triedit, who confidentially informed him that his only reason for selling out at half what it cost him, was that he had little taste for farming. In due time the new occupants are installed. The girls brought their piano with them, and Mrs. Pitchin did not see how it was possible to get along without her old cook and chambermaid—so they came also. Then there was the conservatory, it is true, looking somewhat sickly from the dusty atmosphere and lack of sunlight in the crowded city; but then the change to country air would be just the thing for the plants, and as it would be necessary to have a garden, they might as well take along with them a professional one; it would be so pleasant to have forced fruits and flowers in the winter.

Pitchin has dreamed of a coach and fast horses, but as yet it is but a day dream, so he buys team horses, and as it is time to plow, and sow grain, he becomes quite bothered with the great number of details connected therewith, growing out of, as he supposes, and necessitated by the modern improvements introduced into this business since he was a boy. Forgetting the homely maxim, that

> "He who by the plow would thrive,
> Himself must either hold or drive,"

Pitchin trusts all to his foreman, whom he picked up in the city, and is quite as ignorant of practical farming as himself; but who assumes an *au fait* which settles the thing in Pitchin's mind, that he will carefully study his foreman this season, so as to qualify himself to act as his own foreman the next, unless farming should pay so well that he could afford to pay the extra expense of a manager, who, like himself, did nothing but to give orders and see the men work.

Pitchin started with the intention of paying as he went along, and had laid in a stock of groceries, which he supposed would last until after harvest, but is told that

the larder is nearly empty long before seed-time has been passed, and as he writes an order on the groceryman in town, it occurs to him that the country air gives people prodigious appetites. His cash has melted down, owing to the cost of farming implements, which are twice as much as he expected, until he has to ask the groceryman to charge his orders, until harvest. Carpenters, masons and painters have fulfilled their missions, and the place really looks splendid, and Pitchin views the premises with bewildered gratification. What would the improvements cost, was never before considered. What they have cost, has now found solution in his depleted finances. Harvesting is coming on apace, and Pitchin calculates his area of acres by a given number of bushels raised per acre, which he remembers to have seen at a recent agricultural fair, where samples were exhibited, and vouchers given that the prodigious yield was in reality a fact. He repeats to himself, as he looks over his tables of calculations, "figures don't lie;" so he goes to town, and procures an advance from his commission merchant of a specific amount of money on each bushel of grain now growing. Reapers and threshers are bought, bags engaged, and in due time a great gang of men and animals are sweeping over the fields of Pitchin. Some portions of the fields are over-ripe, other patches too green; but it will not do to make a detour from that course which will enable them to go over the most ground in a day, as there are a great many men under pay, which it will not do to detain. Then Pitchin has an ambition to excel all of his brother farmers in the rapidity with which he has accomplished his harvest. It matters not if the wind is blowing a gale, so that the unthreshed grain flies over the fields in the process of being loaded, and hauled to the threshing machine. The first day's work of threshing is over, and Pitchin has counted up the amount of grain sacked, and calculated the number of acres it came off of. A misgiving crosses his mind that it is not realizing his former figures; so to reassure himself, he counts the sacks over again, and paces off the land, so that there can be no mistake this time about it.

Mrs. Pitchin notices that he looks disconcerted at tea, but thinks it is owing to the fatigues incident to a farmer's life. After tea is over he opens his desk, and scanning the paper on which he made the first estimate of his crops, sees at once the astonishing discrepancy; but then it is suggested to his mind that there is likely to be a proportionate falling off in all other farmers' crops. Hence the natural deduction that an enhanced price will result favorably to the producer. Harvest being over, and the grain shipped to the commission merchant, who has it stored and insured, Pitchin has leisure time to visit the annual fairs, where again he notices splendid samples of grain, and other statements of prodigious yields per acre, which considerably disturb him, as he had at one time anticipated carrying off the first premium himself. Chagrined, he reflects that possibly there was something wrong in his mode of cultivation, and he determines next year to try a series of experiments. He has been waiting some time for the corn market to rise, but it don't do it, and as the season of sowing again is coming on, he concludes to order his merchant to sell, and going to town a few days after, he is presented with a statement of accounts, on perusing which he finds that interest on advances, commissions, storage and insurance

have swept away the entire proceeds of his farm. A cold perspiration starts upon his brow, as he internally says to himself "farming don't pay," and under the spasmodic disappointment, he half resolves to sell out and return to city life; but on getting out again into the country, the smiling landscapes lead him into a better train of thought. He realizes that they have all enjoyed robust health, and after all, his slumber has been less disturbed than when the phantom of a protested note flitted all night long through the overtasked brain. Before he reaches home he has calculated up the expense of many things which he ought to have dispensed with the past season, and finds that he can get along very well without the professional gardener. The foreman of the farm can also be spared, and he is satisfied that when Mrs. Pitchin is informed of the real state of affairs, she and her daughters will forego the chambermaid, and possibly do the cooking at seasons when he has no workmen. These items of wages, to say nothing of what was wasted and destroyed, he perceives would have made him a fair year's profit.

Pitchin is of a hopeful disposition, and puts *his* hand to the plow with the determined air of one who intends to succeed. Mrs. Pitchin, also, looks matronly and happy, as she packs away those nice rolls of butter for winter use; while the girls take turn about in housekeeping, the exercise incident to which has given their cheeks the roseate hue of health, and in cheerfulness their songs vie with the gladness of birdlings.

Having said this much about how farming did not pay, we sometime will let our resolute friend Pitchin tell how farming did pay. F.

THE CASHMERE GOAT.

THERE are many millions of acres of land in California, covered with rich grasses and low evergreen shrubs, which, on account of their inaccessible nature, being rugged declivities, are of no use whatever to any of our domestic animals. These lands are to be found throughout the coast range of mountains, and alongside of the great valleys, forming those picturesque hills which jut out in sharp angles, giving to California scenery that unique and ever-varying form so agreeable to the eye. It has been supposed that all of these hills were suited for sheep grazing, but on trial it is found that this animal, being inclined to move in compact bodies, will, on the creation of an alarm, real or false, be seized with a panic, and follow in a mass any accidental direction, without regard to the dangers of the pathway, the foremost being impelled onward by those in the rear. It often happens that an entire flock of thousands will be precipitated into a gulch or cañon during the fright, and the result must be a great destruction of life by smothering and trampling.

Then again, the sheep is of a clumsy habit, illy fitted to climb the steep hillsides, or scramble with safety among rugged and overhanging precipices. Its wool, also, being of a compact and adhesive texture, catches upon the chapparel, and if it does not hold them fast, like Absalom suspended from the tree, it renders their movements

among it difficult. With the Cashmere Goat, the case is entirely different. Natives of the Himalaya mountains, nature has endowed them with the instinct of self-preservation, and a physical power which enables them to climb the most inaccessible hights, and subsist on the scanty herbage of those inhospitable altitudes. It may be said of the Cashmere, as of the common goat—no danger, however imminent, can produce among them the least panic; as, when pressed with approaching danger, they range themselves in battle array, with the kids and ewes in the center, while the bucks flank the outside of the circle, presenting a front to the foe not easily broken.

The fleece of the pure blood Cashmere goat is valued at six to seven dollars a pound, and when crossed with the common goat, less in proportion to grade. The goat, if left to its inclination, will seek the airy, steep localities, in preference to those smoother grounds, only on which sheep can be grazed with safety. Its fleece, also, being long, silky, and the fiber straight, is not liable to tangle on the obstacles it encounters on the steeps.

From the investigation we have given the subject, we are satisfied that no country in the world is so admirably adapted to the breeding of Cashmere goats as California; and while we do not wish to divert the attention of stock-growers, who seem to be greatly excited at this time on the subject of thorough-bred horses, cattle and sheep, we still would be glad to know that some one of our *live* Californians was engaged in the importation and breeding of this invaluable animal adjunct of commerce, on a scale commensurate with its importance. We believe that capital could be invested in no enterprise so sure to be as highly remunerative as the business of growing the Cashmere wool, which can be conducted on a scale of magnitude, looming up in the future, side by side with our wine, wool, and gold product. F.

EMPLOYMENT FOR THE CHINESE.

A GREAT stream of Mongolian life seems to be setting towards California again, and under such circumstances as to threaten a complete inundation of all our industrial pursuits. For years a series of harrassing legislative enactments have tended to oppose periodical obstacles to their inroad, but our courts have swept these barriers away as fast as they were raised, and the Chinese are at last declared by our tribunals of highest resort, to be eligible to domicil in the state, as free of restraint as any other people. It is true, they are taxed as miners and fishermen; but this is of so trivial an amount as not to become a prohibition, and is submitted to, notwithstanding the probability that it is unconstitutional; it being regarded by them as the means of acquiring a proprietary right, creating an estoppel against the state whenever the right of ownership of mining claims shall be questioned.

At an early day we thought we foresaw that the domicil of masses of Chinese amongst us would have the inevitable tendency of reducing wages, and while occupying a legislative position, took decided ground against encouraging this class of immigration. It is true that we voted solitary and alone, against the capitation tax of

fifty dollars, as the records of the state senate will show; believing such a law was unconstitutional, which the supreme court afterwards declared. We stated our belief at the time, that the only remedy we could devise to curtail Chinese immigration was to pass an act defining a time, after which no person, not eligible to citizenship, could be invested, under the law, with the proprietorship of mining claims. We were aware of the fact, and stated it, that the great proportion of Chinese were merely coolies, and were here employed under, and for the benefit mainly, of Chinese speculators, in a species of involuntary servitude, under conditions entered into before leaving China.

We felt that if this labor was to be used to the detriment of white labor, it were far better that our own people should receive its greatest advantages. Had the Chinese been denied the proprietorship of mining claims, they would have been as absolutely under the control of our citizens as they are now of a few Chinese companies. We urged, at the time, that this policy would have the effect of withdrawing them from mining occupations, and that it would afford a labor power to reclaim our tule lands, and bring about upon them an extensive rice culture. But, representing in part the commercial entry port of the coast, we were charged by our constituents with an anti-commercial policy; nor were our views received with a better favor by the mining districts, whose immediate interests they were most directly calculated to benefit.

Notwithstanding all this, we yet incline to the opinion, that had this policy been adopted, white labor in the state would at this day be far more remunerative. We have frequently heard the statement made, and never contradicted, that a great proportion of the Chinese laborers in California receive only thirty to fifty dollars per year for their services, being found. Now, could our enterprising citizens get the control of this labor power at those rates, we should be enabled to develope new sources of industry, which would give employment to the entire Chinese in our state, thereby withdrawing them from ruinous competition with our own race. That they are seriously affecting the prices of wages, may be seen, by observing that large numbers of them are employed picking strawberries, at Oakland and Alameda. They can be hired at one dollar a day, and find themselves, while the wages of white men are two dollars; and it is said by those employing the Chinese, that they will pick quite as much fruit in a day as a white man.

It is admitted that as the price of labor declines, the inducements for Americans and Europeans to emigrate to California become less. This accounts for the great falling off in immigration of late, because the expenses of reaching here are scarcely diminished, while the inducements to come are nothing in comparison to what they were several years since.

Aside from the pecuniary considerations connected with their presence, there are great social questions involved in the Chinese problem, and the two features most urgently demanding solution, are its moral and political aspects. Our civilization, certainly, can hardly be elevated by contact with a race of people repulsive in their habits; while the sexual leprosy they spread among the degraded of our own race,

is of the most revolting, lasting, and fatal character. Then when we look at its political phases, may there not be just grounds for alarm in the future?

It was only by the accident of having on our Supreme Court bench, judges imbued with states rights doctrines, that we were rescued from the calamity of having the Chinese made eligible to eitizenship. There was already a precedent case, where a Chinese was admitted to citizenship in the state of Connecticut, by a United States Judge. Suppose for a moment, that forty thousand Chinese, controlled by four or five Chinese houses in San Francisco, should be made voters; would they not become a rare commodity for our trading politicians?

We claim, and with good reason, to be a brave and dominant race of people, but it must not be forgotten that we are on the western confines of civilization, with myriads of semi-barbarian people staring at us with awaking euriosity, from their populous hives throughout the Pacific world, while almost two thousand miles of a savage-traversed continent walls up its mountain ridges between us and succor.

We may as well make up our minds at once that the Chinese will continue to come here in increasing numbers, just as sources of employment are open to them. These are the fruits of reciprocity; and our merchants are found in the Chinese marts in proportionate numbers as the inducement of profitable trade offers; yet they are subject to local restrictions, and debarred from many privileges retained by themselves. This retaliation it is perfectly legitimate for us to adopt, having the power to enforce police and sanitary regulations inherent in state sovereignty. Thus, by legislative authority, we may dictate as to what localities they may take domicil in, and also the kind of occupations it shall be lawful for them to pursue. It may operate harshly upon the proscribed caste, but the instinct of self-preservation ereates for the dominant, superior race, the law of necessity, from which there is no appeal.

F.

FIREWOOD.

Editor Culturist:—Not the least in importance among the many subjects interesting to agriculturists, as also to many others of our population, is that of the question—where are we to obtain our supply of firewood in the future? Taking, for example, that portion of the country known as the Bay district, we find the supply already almost exhausted. The trees which formerly stood on the hills of Contra Costa and Alameda, visible from the bay, are to be seen no more. The magnificent oak groves of Oakland and the Encinal have been so thinned and mutilated to furnish a supply of fuel, that the residents of those vicinities have awakened to the fact that in order to retain a shelter from the strong summer winds, they must abstain from destroying their trees.

Farmers cannot afford to pay the price which is demanded for coal; but as that will before long be as cheap as wood, or, as we should say, wood will be as expensive as coal, it is extremely desirable that we should "take time by the forelock," and devise some plan for remedying the evil.

We suggest the planting, by every farmer who is permanently located, a portion of his land in locust trees; the seed is cheap, the culture easy, and the growth rapid. Almost every man has small places on his farm where the locust can be planted, without interfering with his general operations, and it is not probable that any investment requiring so little outlay will return more profit than this. On the opposite side of our bay, (in Alameda county), we notice large tracts of hill land, where this business could be carried on extensively. The sites could be had at extremely low prices, and from their proximity to *the* market of the state, possess great advantages for the purposes designated. We will recur to this subject again. J. D.

ACCLIMATING GARDENS.

AGRICULTURE and horticulture have been vastly stimulated within the last twenty years, by the attention which different civilized governments have given to the building of extensive glass houses, for the propogation of exotic plants, and the liberal endowment of Botanical Gardens connected therewith. It may be said by an Englishman that he can, in an hour's drive from London, see every plant, tree, shrub, or flower and fruit grown in any part of the hemisphere; as Kew Gardens are a miniature vegetable world, where everything that buds or blossoms is found flourishing as though in its native clime. Horticultural tourists have from time to time described, with rapturous emotions, the Imperial gardens of St. Petersburg, where, buried in mid winter, among the snows of that frigid latitude, may be seen, under roofs of glass, in all stages of bloom and fruitfulness, the palm dates of Africa, the guava of Cuba, or plantains and pines of New Granada.

Immense as has been the expenditures of monarchs to collect and acclimate all rare plants, their object seems to have been rather to encourage the ornamental of the vegetable kingdom, instead of the useful; and it has been left to the United States to lead off in the task of collecting, and distributing among its people, those seeds and plants which are particularly adapted to the practical uses of life.

For several years the Patent Office has been collecting and distributing, mostly through members of Congress, new varieties of seeds, obtained from the old world. By this means the values of vegetables and grains before unknown to our cultivation, have been simultaneously tested over a great diversity of climate and soil. Some of these seeds have proved valuable, while it may be said of the greater portion that they are worthless. The good or evil they might have produced has to a great extent been negatived by the insufficient manner in which they have been distributed. They have been regarded as the legitimate spoilations of members of Congress, and have been disposed of by them to political favorites in their respective districts. In this manner they most frequently are sent to political bummers, who have not a rod of land to plant them in, and are thrown away. We will hazard the statement, that if an investigation were had, it would be found that more than three-fourths of all the agricultural reports annually sent out from the Patent Office by the direction

of Congress, are sent by Congressmen to persons other than farmers; and that these books, containing so much practical information, and useful mainly to agriculturists, are to be seen on the shelves of lawyers' offices, or piled away with the rubbish of court houses, and in the hands of persons devoted to the various literary and scientific professions.

Now, it is quite natural that it should be so, as politicians are not supposed to have any very intimate relations with the producing classes; therefore, when the honorables frank documents, their memory fails to designate beyond the village professional man, or the local political magistrate. We conceive that the true intention of the law making an appropriation for the purchase of seeds, and printing the agricultural reports, is to benefit agriculture, not to become an engine for political purposes; and the most direct way to bring this department of the government to its proper vocation, would be the abolition of the franking privilege, and the creation of an Agricultural Bureau, charged with the duty of distributing seeds, plants, and books to the different agricultural and industrial societies of states and districts, who should in turn, distribute them among their members. These views appeal for a change with increasing force as the time approaches when the national propagating gardens at Washington shall be prepared to distribute the large amount of new and choice varieties of vines and plants collected from all quarters of the globe. There are now growing in those gardens great numbers of tea plants and grape vines, in which the people of California should feel a deep interest. Before these articles can reach California they have to pass through a hot climate, and are subject to the injuries incident to a long voyage at sea. Now, under the best care, and in packages suitable for shipment, it has been found by experience that not half of all the plants shipped from the Atlantic states to California ever arrived here alive. How, then, can it be expected, that when put up in small parcels, and sent through the mails to individuals unaccustomed to the management of the garden, these plants or vines will ever be of any practical benefit? Had the plants already sent by Congressmen to political favorites here, been put up in large packages by experienced packers and forwarded to the care of a nurseryman, to have been planted out in nursery form for a year, then to be distributed, we doubt not some considerable number of them might be found at this time in a thriving condition; whereas, it is a difficult matter to find growing in the entire state, a plant or vine received from the Patent Office, through a political channel.

With these facts before us, we are impressed with the necessity for the establishment of a State Botanical Garden, to be under the management of the State Agricultural Society; and since the capital has been located, and extensive grounds secured to surround the buildings, we hope to see a portion of these grounds set aside for this purpose. From the liberality displayed thus far by the Legislature toward the cause of agriculture, we doubt not an appropriation would be made, sufficient to erect necessary buildings for the propagation of plants and laying out the grounds. With this aid, the State Agricultural Society will be enabled to carry on a series of experiments with all known varieties of grapes, so as in a short time to demonstrate

those which would be the most suitable for wine purposes. In no country in the world could an acclimating, propagating garden be conducted on an extensive scale, with so little cost, and with such entire success as in California. The mild, even temperature of the climate would permit the out-door cultivation of almost all the useful plants, whilst artificial heat in the houses would not become an extensive item.

We trust that the State and District Agricultural Societies will make a movement this season towards the establishment of one or more botanical gardens. Should it be thought best to establish only one, then this should be under the auspices of the state society, which should make distributions of articles to the district societies *pro rata* as they have memberships. We know of no way of obtaining so large a number of memberships to the state and different district societies, as by distributing to the members books and plants. In this manner, numbers will feel that they get, in return for the cost of membership, rare articles of invaluable estimate, in a pecuniary point of view. From a small beginning, on such a basis, our agricultural societies would become the most prominent institutions of the country, and the good they would do all of our industrial interests, would be evidenced by the introduction through their aid, of the successful cultivation of the staple commodities of almost all countries. F.

BAD ORCHARD MANAGEMENT.

THE question has frequently been asked, Why do orchards require so much more care in California than in the Atlantic states, in order to make them productive, when our fruits show such a superiority over those of other countries? It seems paradoxical that it is more difficult here to raise a good orchard, and still, that once grown, it will produce more and better fruits than orchards of the same age in any other climate. This is accounted for by meteorological and climatic laws.

In Europe and the Atlantic states, the frosts of winter compel the trees to undergo a season of rest, when the sap becomes entirely dormant, as then the roots and branches are alike frozen, so that there is a cessation in the action of both for a period more or less limited. This we never have in California; the ground never freezing, therefore the roots are in an active condition throughout the winter months, sending up a perceptible quantity of sap, as may be observed by winding a wire around a branch after the leaves have dropped in the fall, letting it remain through the winter, when it will be found indented before spring. Now this would serve to indicate that we have to get our season of rest for our trees by an artificial process, which can only be done by allowing the ground to dry up after the trees have made their spring and early summer's growth. This is materially aided by removing the earth from the roots, so that they are in a measure exposed to the dry air; yet there is one objection to this—it induces the formation of eyes on the roots, which, on the pear, plum and some other kinds of trees, are apt to sucker badly in consequence the ensuing season.

Now, as we have no rain through the summer and early part of fall, the land will

naturally become dry, unless artificial irrigation is afforded and kept up continually until late in the season. Where this is done, it is absolutely impossible to give trees any season of rest, as by irrigation, an unnatural, strong fall growth is produced, which prevents the formation of fruit buds—the latter being developed and matured just as the terminal buds are formed at the end of the branch by cessation of growth. On land rather retentive of moisture, the tree can be checked in its tendency to a late growth by summer pinching, which we are growing more in favor of, the more we test it. As we remarked in our last number in reply to "Catawba," on summer pinching of the vine, we are not inclined to summer pruning, because when the knife is used, one is apt to cut where the wood has hardened, which scarcely checks the upward flow of sap, as the buds nearest the points of amputation will at once burst out and absorb the upward flowing volume; whereas, by pinching, one has to seize the branch to be shortened where it is yet in a soft and immature condition.

Almost every spring we are treated to long and dubious reports in the Atlantic journals, of the severe loses of fruit trees by the severity of the winters; and we have seen it stated that, of all the trees there sold by nurserymen, not one-half of them ever came to a bearing condition. This certainly is a discouraging exhibit to those contemplating the planting of orchards. If this is the experience of countries where the failure is traced directly to the severity of the climate, one would suppose that, in this state, where no trees are lost by that cause, orchard planting should be a matter of easy accomplishment, attended with satisfactory results. But such is not the case. From careful observation during several years experience as a nurseryman, we are convinced that, of all the fruit trees sold in California, not one-third of them ever survive to a bearing age; and it is safe to affirm that not more than half of this third will ever produce any considerable amount of good fruit. Why is this? We reply, because of the bad treatment given the trees, at some time or another, after they were removed to the nursery rows. Perhaps they had to be transported a long distance, and the roots were exposed to the sun, a cold wind or frost. They may have been planted out without having the bruised roots pared off, or the top shortened in; even if they were kept from exposure and the prerequisites of pruning were attended to, they may have been jammed into a small hole or buried so deep that the roots rotted before the ground became warm, so they could form the germinations; or worse than all, grass and weeds were allowed to absorb the surface moisture, so that the ground was made dry and hard as a bone before summer was half over. Then it is probable the cattle were allowed to browse what the borers had not killed outright; so that you wonder why your trees do no better. You had seen trees survive in the Atlantic states under this treatment, and without marking the difference of climate, you think they ought to do as well or better here. F.

CALIFORNIA SEED GROWING.

IT is reasonable to estimate that, of all the seeds annually imported and sold, not one-half of them ever germinate, no matter how much care is taken in planting them out. This is owing, to some extent, to the practice of unscruplous seedsmen in the Atlantic states, who send off their old stock to this coast, arguing that anything will do for the California market. We do not wish it understood that all seedsmen East do this, because we are satisfied there are some establishments, whose integrity places them above this suspicion; yet we have reasons to know that it is done by many, and the damage it has been to our cultivators can hardly be estimated. There are two main causes why imported seeds fail to grow: the first, because they are old; and the second and main reason, they are hurt in the artificial process sometimes adopted in curing, during the rainy season at the East, and are badly packed for the voyage by sea, through the tropics to this state. It often happens that a sailing vessel or steamer sweats badly, and the cargo becomes heated. This, in our opinion, is why so many of the seeds, apparently newly grown, fail to germinate.

The outlay for garden, nursery and field seeds is far greater than our people are aware; and the business for raising seeds for home supply, as well as the growing demand for the great territorries between the Pacific coast and the Rocky mountains, affords a large and growing field for this branch of pleasant and lucrative industry. Then there is the entire coast, from Sitka almost to Cape Horn, where our commerce is now being permanently established, creating a demand for supplies of vegetables which can be raised everywhere. Also innumerable islands geming our great ocean, and still beyond the continents of Asia and Africa, gladly seeking an exchange of commodities, among which nore are more sought for than our improved varieties of seeds.

It has often been said that California excels the world in the production of cereals, vegetables and fruits, nor should her seeds be barred as an exception. If any doubters exist as to our ability to produce garden seeds, of superior character and at a highly remunerative profit, let them pay a visit to the establishment of Daniel S. Perkins, of Alameda. Mr. Perkins is a graduate of the Shaker establishments in the New England states, and arranges his grounds in the same systematic manner observed by those methodistic people. Although we have a dry climate during the time of ripening seeds, so that they could be dried in the open air, Mr. Perkins has erected a building exclusively for curing under the shade. This building is well ventilated, so that neither sunshine nor humidity can effect the vital vegetating principle of his seeds. We found Daniel very communicative, and he seemed to take pleasure in explaining the minute details of his method of management, in the cultivation, curing and packing of seeds, and he promised to give us further information about this branch of business.

We have seen it stated that seeds deteriorate when propagated through a number of generations in this climate. Such, we are satisfied, is not the case, when the product is from suitable parentage. In order to secure the growth of perfect germs,

great care should be exercised in selecting healthy, well developed stocks to grow the seeds from; nor should it be forgotten that, if you would keep the varieties of a species distinct, the seed rows must be removed to such a distance that the wind will not carry the pollen of one kind so as to impregnate the blossoms of another. F.

CHERRIES AS A MARKET FRUIT.

AMONG all the small fruits that appear in our markets, none maintains a higher relative value than the cherry. One dollar and a half a pound for the earliest varieties, and imperfectly ripened at that, is not an unusual price in the markets of San Francisco. When they get down to a dollar a pound, people begin to buy quite freely; but when they reach their minimum, or lowest figure—fifty cents a pound—nearly all feel as though they could indulge in one good feast of cherries. Now, what would a great many of our staid and money-saving friends of the Atlantic border do, before they would pay fifty cents a pound for cherries? Why, certainly, they would do without. And what would fruit growers do in that same good old country, if they could get fifty cents a pound for all the cherries they could raise of early and late varieties? Why, they would raise cherries and make themselves rich. This the cherry grower of California can do.

Nothing is more certain than that certain localities around the bay of San Francisco, are, in their climates, admirably adapted to the finest growth of the cherry. There are quantities of this excellent fruit in our markets daily, that will compare favorably with the best of any country. One would certainly suppose, judging from the uniform high price of this fruit, that more of our pomologists would undertake its culture. But it is found to be attended with no little inconvenience, risk and annoyance, to bring out a fine crop of cherries in perfect condition for the market; and yet, there is but one really serious drawback incident to their culture, and this arises from the depredations of birds. Were it not for the havoc made upon the ripening fruit by these pests of the garden, cherries would sooner become a favorite fruit for market culture.

The only way that cherries can be fully ripened, is by netting the trees with a mesh, so small as to prevent the ingress of the smallest birds that feed upon them. Upon anything like an extended scale, and with trees widely apart from each other, this method is attended with much inconvenience and no little cost, as each tree requires a net of a size sufficient to completely envelop it; and as most cherry trees, in our climate, are inclined to an upright growth, with long shoots, almost entirely void of side branches, it becomes a difficult matter to arrange and successfully manage their net-coverings. It is not, perhaps, as generally known to the fruit culturists of our state as it ought to be, that the cherry, in many of its varieties, succeeds admirably as a dwarf, propagated upon the Mahaleb stock. Such trees are generally even more productive than when grown as standards, and come earlier into bearing. Their tendency to an extreme upright growth, is also in a considerable degree

checked or counteracted by dwarfing, the trees more readily assume a spreading form near the ground—a result that greatly favors the gathering of the fruit.

Upon the preceding premises, based upon our own experience in the culture of cherries upon the plan we propose, we suggest and confidently recommend the planting of cherry orchards of dwarf trees. We would set them from six to eight feet apart, that they might occupy nearly the entire surface of the ground in a very few years from their planting. One great object secured by this mode of planting is, that the fruit is much more easily gathered than from standard trees; and another, and paramount object is, the ease with which the fruit is preserved from the depredations of birds. To effect this, posts are set at convenient distances, of a hight sufficient to permit the spreading of a net completely over the whole, supported between the posts by light rails, and clearing the tops of the highest trees, which never need be more than eight feet, or about the hight a tall man can conveniently reach. Around the sides of the orchard, the netting can either be permitted to extend to the ground, or a fence (bird proof) can be erected. In this way, not only can a large quantity of cherries be grown upon a small piece of ground, but the fruit can be cheaply protected, as the netting, carried in after the fruiting season, and carefully preserved, will last a number of years; whilst the effect and general appearance of an orchard of cherries thus grown, is really beautiful. W.

THE WATERS STEAM PLOW AT WORK.

MR. James Waters, the inventor of the steam plow, as we announced some two months ago, took his machine to Illinois to perform some contracts for plowing, which he made during his visit to that state last fall. The *Prairie Farmer* of last week gives us the following account of his success. It is worthy of note, that whilst the Fawke's steam plow was heralded forth as the great invetion for prairie plowing, and was awarded the premium at the United States fair, it has not as yet gone into the real actual business of plowing; whilst Waters, with his machines, has not only made the machine, but is doing the work at a cheap and economical rate, making it a business to plow by steam. We consider Mr. Waters by every rule of practice and theory has thus done more for the state of Illinois than any invention yet shown, and is the person who was fairly entitled to the award. The editor of the *Prairie Farmer* says:

We visited Minooka, in Grundy county, last Friday, in order to observe the working of Waters' steam plow in breaking prairie, and will tell our readers what we saw there. On our arrival at Minooka, we learned that Mr. Waters was at work. In company with Mr. L. Smith, who kindly volunteered to take us to the field, we left the station, going north, and passed over a field of forty acres, which had been broken by Mr. Waters with his plow. This was his first work; his plows not having been finished up and polished, the breaking in this field was somewhat rough and broken; but altogether, was very well done. The undulations in this field were considerable,

giving both an up and down grade, thus testing the capacity of the machine in this respect.

Passing this ground, and ascending a high roll of the prairie, we caught sight of the plow in the distance, traveling leisurely across the prairie, drawing its gang of six plows, cutting a furrow nine feet in width. The scene was grand and exciting. As we approached the machine, we found Waters quietly guiding it, with none but the necessary attendants about him, and thus practically testing its ability and power before seeking to place it permanently before the public. We noted down the operation of the machine while we were with it. From a given point it traveled twenty-three minutes; stopped six minutes for wood; ran thirteen minutes, and stopped nine minutes for water; then ran nineteen minutes—making fifty-five minutes running time and fifteen minutes stoppage. Had the man whose duty it was to furnish wood and water, performed that duty as he should, and could have done, he would have saved at least five minutes of this time. Estimating the ground plowed as nearly as we could without actually measuring it, we found that during seventy-two minutes (iucluding stops) he had plowed 2 63-000 acres. That the machine can plow at this rate through the day without interruption, is not to be expected, in its present condition. The day previous to our visit, Mr. W. plowed twelve acres with it. The plows had been put to some very severe tests in a field full of small oak and hickory stumps, or "grubs." These were cut off without injury to the plows, and apparently without effect upon the engine. We measured one of these hickory roots which had been cut through—its diameter was four and a half inches.

In this trial, Mr. Waters used but six of his gang of thirteen plows. His traction power seems sufficient to draw them all; and when some more convenient mode of handling and managing them shall be adopted, thinks he will have no difficulty in using the full gang.

As the machine is now arranged, it requires one and a half cords of wood, a hand and team to supply fuel and water (the water, in this case, being a half a mile away) a fireman, two men to manage the plows, beside Mr. Waters—to which add oil, etc., and Mr. W. says the cost to him is less than nine dollars per day.

James Waters, the inventor, deserves more than a passing notice—more than our space, and the data in our possession will permit us to give. Naturally very retiring, he has worked quietly and almost unknown. His mechanical talent and judgment are of a superior order. So complete were his plans perfected in his own mind, that within three months from the time the first blow was struck on his machine in Detroit, he drove it into the United States fair grounds in this city, amid the shouts of the assembled thousands. It there demonstrated its enormous power, in turning over a furrow twenty feet wide and from six to eight inches deep, with its monster gang of thirteen plows attached. Uufortunately, before it could be tested by the committee, some portion of the plows gave away and prevented a thorough trial. Not at all disheartened, Mr. Waters repaired up, and visited the central portions of the state, exhibited the plow in operation, and finally returned to Detroit, where, during the winter, he has made some slight alterations; and additions to strengthen and

improve have been adopted. He now appears, unannounced, on our prairies, to claim what he has won—the honor of being the first man in America who has made a practical and *paying* demonstration of plowing by steam.

Up to the time we left Minooka he had plowed about seventy acres, and is now engaged in a large job of prairie breaking, for which he is paid by the acre. It is his purpose to continue the work with his present machine, until he shall have established by experience what improvements are necessary, or may be made, in order to render his invention perfectly adapted to the wants of western agriculturists. These once fixed upon, will be adopted. He now thinks he has learned something which will prove profitable; we doubt not he has. We shall look to see the results of his experience demonstrated.—*Michigan Farmer.*

BONE MANURE.

EDITORS CULTURIST:—I wish to obtain what information I can, relative to the value of bones, as a special manure for horticulturists. I am engaged in fruit growing, embracing nearly all the larger and very many of the smaller fruits and berries. I find in my locality, in some instances, serious objection to the use of coarse, unfermented manures, such as are generally obtained from city stables. I have used guano with considerable success, when able to procure a good article; but it is so generally adulterated, or of such a miserable quality, that I have despaired of its use as a profitable fertilizer. I have also tried bones reduced to a fine powder, and believe it a better and cheaper fertilizer than guano, provided some method could be devised—in the absence of a bone mill—to reduce the bones to a fine powder; for the immediate profit from its application, I am certain, depends upon the degree of fineness to which the bones are reduced, and the finer the better. My method of reducing the bones to powder, is by pounding them in a large mortar and sifting them through a wire gauze sieve. I have heard of a process by which bones are dissolved in some way in acid. Can you give me any information in respect to the mode, and can it be done as effectually and cheaply as by pounding?

A SUBURBAN FRUIT GROWER.

There can be no doubt in regard to the value of bone dust, as a special or general fertilizer. Upon almost any soil adapted to the growing of grains, fruits or vegetables, its application tells upon the increased product, either in the form of straw or haulm, or a larger and better fruit. It is one of the most cleanly and easily applied of all the condensed fertilizers, that of late years have been introduced to the notice of amateur culturists. It has been found peculiarly beneficial to the pear, plum and cherry, and equally so to strawberries and blackberries. For the above, as a special manure, there can be no doubt of its value; whilst, as a general manure for field crops and most garden vegetables, it is really unrivalled.

The only hindrance to its more extensive use, is its scarcity; for even when bones

can be secured in considerable quantity, there is not always a bone mill for crushing them, as intimated by our correspondent. In the *Field and Fireside*, Mr. Chas. F. Raymond, of Norwalk, Conn., gives the following recipe for preparing bones, as he uses them:

"Collect from butchers and elsewhere, all the bones that can be had (Mr. R. pays boys twenty-five cents a bushel for gathering them) and break them up with a sledge-hammer till the pieces are not larger than hazel-nuts. Put the broken bones into tubs, and to every twelve pounds add one of oil of vitriol. By occasionally stirring and turning the mass from the bottom, chemical action ensues, heat is generated, the bones become soft, and their earthy part is either dissolved or converted into a fine powder. Mix with a little dry loam, or pulverized charcoal, and it is ready for use. W.

TO PRESERVE FLOWERS IN THEIR NATURAL COLORS.

OF late, an entirely new article of trade has arisen in Germany in the shape of dried flowers. Erfurt, the city of nurserymen and florists, excels in manufacturing bouquets, wreaths, floral decorations for rooms, dinner tables, etc., made of such flowers. We are glad, therefore, that we are enabled to lay before our readers the *modus operandi*, by translating for them the following article from the *Deutsches Maganin fur Garten and Blumenkunde.*

First condition: Get a lot of fine sand, wash it till all the soluble particles are gone—you can test it by pouring the water off till it looks quite clear; when you are quite sure of the fact, pour the sand on stones or boards placed aslant, so that the water can run off, and let it get dry either by sun or fire—dry, perfectly dry. Then pass the sand through a sieve, so that all dusty particles disappear from it, so as to get rid of too large grains. When that is done, your sand should be a mass of fine particles of nearly equal size, as is, for instance, the so-called silver sand. Keep the sand in a very dry, if possible also in a warm place, that no vitalizing quality may remain in it.

Cut the flowers in a fully developed state, taking care that they are neither wet nor moist by dew, rain, etc. If you cannot obtain them in any other condition, then the following troublesome proceeding will render them dry. Take one or two flowers at a time, and put them into a glass, into which pour just enough water that the ends can stand in it; the flower will then dry, and still suck up water enough to prevent its fading.

Next get a box or pot, or anything large enough to hold your flower or flowers; pour sand enough into it that they will stand by themselves, their stems imbedded in the sand. You have to fill up the box above the level of the flowers with sand, so that the flowers are completely imbedded in it. By means of a tube, or a funnel, or a sieve, just accordingly, you can do it in such a way that every particle of the flower rests in sand, and that your filling shall not have crumpled or displaced the

smallest petal. Of course, such a thing can be done only in a very slow way by a beginner.

And now take care not to shake your box, else the flower inside might get hurt. Carry it to a place both dry and warm, that all the moisture in the flower may pass into the sand, which being porous, is in turn acted upon, and will let the moisture pass entirely out, and get evaporated. Avoid, however, positive heat, or the colors of the flower will fade; whilst at too low a temperature, the moisture in the flower will not dry quickly enough, and so rot it. The warmth should, as a general thing, never exceed a hundred degrees.

When you are sure that your flowers have fully dried—a thing a very little practice in touching the box will teach you—the thing is done. Open the box, and by holding it in a slanting direction, let so much sand run out that you can lay hold of the flower by the stem; by turning it upside down, shaking it gently, and, if necessary, blowing on it, all the sand will be removed, and you have the flower in its most perfect form. A little brittle, to be sure, in such a dry state as this, and therefore requiring careful handling. But a few days' exposure to the atmosphere will have imparted moisture enough to the flower to make it considerably less brittle.—*Gardener's Monthly.*

SPAYING MILCH COWS.

MR. Eben Wright, of Dedham, Mass., the secretary of the Massachusetts Horticultural Society, was recently present when the operation of spaying was performed upon a number of cows, by Dr. Dadd, and he gives the following account, which was published in the Boston *Transcript:*

"The spaying of cows is no new feature. As practiced in former days, it seemed a cruel performance; but, since the alleviating influence of ether, the term cruelty can no longer be applied, for in five minutes the animal is so fully under its effect as to be insensible to pain, and in twenty minutes the operation is completed and the animal is quietly making way with her allowance of food.

Yesterday I was present to witness the operation of spaying of five cows of the herd belonging to Edward R. Andrews, Esq., Home Farm, West Roxbury. This farm is devoted entirely to the production of milk for the Boston market. Mr. Andrews had previously had eight cows spayed, and after one year's trial, so satisfactory in all respects had been the result, that he was determined to subject other animals to the same operation as they came into full milking, until his entire herd, consisting of some fifty head, should in like manner be made remunerative.

At 10½ o'clock, A. M., the hour assigned, Dr. Dadd, accompanied by three of his students, commenced the operation by casting the first cow on a bedding of hay on the barn floor. Immediately a sponge, saturated with ether and chloroform combined, was applied to the nose and kept there in a leather bucket, till the close of the operation. In five minutes the animal was so insensible to pain that the veterinarian commenced with his scalpel and bistoury, opening a place on the left side

equi-distant between the lower rib and the hip, cutting through the cellular membrane and the peritoneum, when he introduced his hand and removed the ovaries. The small quantity of blood which flowed during the operation was sponged out as the cutting progressed. The parts were stitched, the ether removed, and ere the tethers could be removed the animal was feeding off the litter on which she was lying.

It was a pleasure to learn that Dr. Dadd has been eminently successful in all like operations, whether performed for lacteal or fattening purposes. Mr. Andrews' cows have continued in full milk, and have proved uniformly healthy and quiet, and this disposition to quietness may as a consequence give an enhanced value to milk coming from the farm, at least for infants requiring to be fed from the same cow the year round."

FLOWER CULTURE.

THE interest which flowers have excited in the breast of man, from the earliest ages to the present day, has never been confined to any particular class of society or quarter of the globe. Nature seems to have distributed them over the whole world, to serve as a medicine to the mind, to give cheerfulness to the earth, and to furnish agreeable sensations to its inhabitants.

The savage of the forest, in the joy of his heart, binds his brow with the native flowers of the woods; whilst a taste of their cultivation increases in every country, in proportion as the blessings of civilization extend. From the humblest cottage enclosure to the most extensive pleasure grounds, nothing more conspicuously bespeaks the good taste of the possessor, than a well cultivated flower garden; and it may very generally be remarked, that when we behold an humble tenement surrounded with ornamental plants, the possessor is a man of correct habits, and possesses domestic comforts; whilst, on the contrary, a neglected, weed-grown garden, or its total absence, marks the indolence and unhappy state of those who have been thus neglectful of Flora's favors.

Of all luxurious indulgences, that of flowers is the most innocent. It is productive not only of rational gratifications, but of many advantages of a permanent character. Love for a garden has a powerful influence in attracting men to their homes; and, on this account, every encouragement given to increase a taste for ornamental gardening is additional security for domestic comfort and happiness. It is likewise a recreation which conduces materially to health, promotes civilization, and softens the manners and tempers of men. It creates a love for the study of nature, which leads to a contemplation of the mysterious wonders that are displayed in the vegetable world around us, and which cannot be investigated without inclining the mind towards a just estimate of religion and a knowledge of the narrow limits of our inteligence, when compared with the incomprehensible power of the Creator.

Flowers are, of all embellishments, the most beautiful; and of all created beings, man alone seems capable of deriving any enjoyment from them. The love of them

commences with infancy, remains the delight of youth, increases with our years, and becomes the quiet amusement of our declining days. The infant can no sooner walk than its first employment is to plant a flower in the earth, removing it ten times an hour to where the sun seems to shine most favorably. The school boy, in the care of his little plot of ground, is relieved of his studies, and loses the anxious thoughts of a home he has left. In manhood, our attention is generally demanded by more active duties, or more imperious, and perhaps less innocent occupations; but as age obliges us to retire from public life, the love of flowers, and the charms and delights of a garden, return to soothe the latter period of our life.

To most persons, gardening affords delight as an easy and agreeable occupation; and the flowers they so fondly rear, are cherished from the gratification they afford to the organs of sight and sense; but to the close observer of nature, and the botanist, beauties are unfolded, and wonders displayed that cannot be detected by the careless attention bestowed upon them by the multitude. In their growth, from the first tender shoots which rise from the earth, through all the changes which they undergo, to the period of their utmost perfection, he beholds the wonderful works of creative power; he views the bud as it swells, and looks upon the expanded blossom, delights in its rich tints and fragrant smell, but above all, he feels a charm in contemplating movements and regulations, before which all the combined ingenuity of man dwindles into nothingness.—*Farmer and Planter.*

THE DAHLIA—ITS HISTORY AND CULTIVATION.

MR. Parker Barnes has recently contributed an interesting article on the dahlia, to the transactions of the Massachusetts Horticultural Society, from which we extract the following, believing that many of our readers will be interested in the perusal of a history of this truly magnificent, ornamental plant; as nothing in the floral line can excel the dahlia in form and coloring, during the autumnal months. They are the crowning beauty of our floral displays, at all our autumn agricultural fairs.

"The early history of this popular flower is involved in some obscurity; but from the mass of matter, we have fortunately been able to cull a few facts, which it may be useful to present before proceeding to the more practical part of our article. The first account we have of this flower is its mention in Hernandez's History of Mexico, printed in 1651, in Madrid, in which two species are figured under the name of 'Acocotli;' both are single flowers—one probably dahlia *crocata*, the other *variabilis*. An Italian work on the Natural History of Mexico, was published in Rome, about the same time, in which two dahlias—one single, the other double—were figured under the name 'Cocoxochitl.' In these works, the roots are described as tuberous, and of a bitter taste.

"The next notice is by Teiery Menonville, who was sent to Mexico by the French government, in 1787, to procure the cochineal insect and its plant. He saw some

dahlias near Guaxaca, and described them as having large aster-like *double* flowers, stems as tall as a man, and leaves like an elder.

"In 1789, dahlia variabilis was discovered in a mild state in Mexico, by Humboldt, and sent by him to Madrid. Seeds were, the same year, sent from Madrid to the Marchioness of Bute. A seedling, semi-double, flowered in 1790, and was figured in Icones Plantarum, when the genus was named dahlia, in honor to Andrew Dahl, a Swedish botanist, and the plant (now dahlia variabilis) called dahlia pinata. In the some work, dahlia rosea (now lost) and dahlia coccinea were afterwards figured.

"Plants and seeds were sent to Paris, in 1802, with the idea they might be edible. The seeds sent to the Marchioness of Bute, though vegetating, never produced any result of importance, and the plants were soon lost.

"In 1802, an English gardener named Fraser, obtained seed from Madrid which produced orange flowers (probably seedlings from dahlia coccinea).

"In the autumn of 1808, dahlia rosea flowered in England. In 1804, a paper was published in the 'Annales d'Histoire Naturelle,' by M. Thouin, in which he suggests propagation by division of the roots, and allowing them to rest during the winter, growing the roots in rich soil during the summer.

"In 1804, Lady Holland sent seeds of dahlia variabilis and dahlia rosea and coccinea from Madrid to England. These were sown in hot-beds, and a few flowers were produced. These, by much care and nursing, ripened a few seeds in 1805 (the first ever produced in England) which produced plants the next year. All the experiments thus far had been made in the green-house. In 1807, dahlias were first grown in the open ground. About this time an attempt was made to change the name from dahlia to Georgina. About 1808, it was cultivated around Paris, and fine seedlings raised. Fine varieties were raised in Berlin soon after; and in 1814, there were many fine double flowers in cultivation, and since that time the plant has been successfully cultivated in England. We are unable to state at what time this plant was introduced to our gradens, but till after the year 1830, it was not grown to any extent, if an inhabitant of our gardens.

"Every florist has been at some period attacked by the dahlia fever, and the plant has in the past been a great favorite. It must, from its many desirable qualities, always be popular, though, at the present time, it seems to be a little out of favor. Dahlias are of every color and all shades, *except blue*, which has never been obtained. In estimating a modern dahlia, form, color and size, are the requisites. In form, the flower should be round, without a center, the large flowerets at the edge gradually growing smaller. The color should be bright and clear. The size should be up to the average of dahlias, of the variety of that exhibited. It may be useful to mention a few of the original dahlias.

"*Dahlia variabilis*, or superflua, the origin of all the dahlias. It is a 'reddish purple' flower, with eight florets and a yellow disk; the seedlings are single, double, and semi-double, and of every color and shade, pink, crimson, scarlet, buff, salmon, yellow and white. A native of Mexico.

"*Dahlia coccinea.*—Color dull red; the seedlings only vary to orange or yellow, and this variety does not hybridize with the last described.

"*Dahlia crocata.*—Flowers brilliant scarlet, with yellow disk.

"*Dahlia Barkerri.*—Allied to D. glabrata, below described.

"*Dahlia excelsa.*—Often grows thirty feet high, tall, without branches, but with broad leaves. Native of Mexico. Anemone-flowered.

"*Dahlia glabrata.*—Flowers lilac, semi-double. A native of Mexico.

"*Dahlia cervantesii.*—Flower orange-scarlet.

"*Dahlia astrantæflora.*—The parent of the anemone-flowered dahlias.

"*Dahlia scapigera.*—A beautiful little white variety, with thick, fleshy flowers, one to two feet high. Native of Mexico. No double flowers have, we believe, been raised from this variety.

"There are other varieties of the original dahlia, which might be described; but they are not in cultivation, so we proceed with our subject—the treatment of our modern dahlia.

"Soil.—My experience is in favor of a compost, made of old black garden mold, stiff loam, and sandy, peaty loam; trench the bed twenty inches deep; the finest flowers are produced with the least trouble in a rich soil, for the dahlia is a gross feeder, though not fond of unrotted manure. Any garden soil will grow this flower; but, by a little attention to the soil, a great improvement in both the quality and quantity of the blossom will be produced.

"Plants and Planting.—My experience has shown that plants struck from cuttings produce the most perfect flowers, the blooms being less inclined to become semi-double, than those borne on plants grown from tubers—the latter often produce very coarse flowers, and are always of a stronger growth. The cuttings should not be rooted so early as to become pot-bound before the time arrives to turn them into the border; if the roots are strong and numerous enough to keep the ball of earth from breaking, it will be sufficient. By the autumn, the tubers become large and solid enough to keep well during the winter, and in the spring the eyes break more freely.

"The plants should be set three feet apart between the rows, and two and a half feet in the rows. Shade of every kind is injurious to the plants. The ground being prepared by trenching, as above directed, choose straight spruce poles—which are the strongest and most durable—and stake the whole bed; let the poles be seven and a half feet long, and be driven into the ground one and a half feet; then plant your dahlias, one plant to each stake; the plant should be set about one inch lower than the surface of the earth in the pot, if the plants have been struck from cuttings; if from tubers, place the crown of the tuber two inches below the surface. Dahlias may be planted from the first of May to July; those latest planted give the best flowers, though, of course, do not afford as early or profuse a display. *Dahlias may flower too early*, and the blooms be burned up by the hot summer's sun; then, before autumn, the plant is exhausted, and no good flowers are produced. A dahlia should not begin to flower before the latter part of August, for cool nights are essential to

the production of fine flowers. The plants should be tied to the poles with soft bass matting, and should be carefully and frequently examined for this purpose: a high wind will often break the plant and destroy its symmetry and beauty.

"PRUNING.—No arbitrary rule can be prescribed; the plant should not be allowed to become bushy, with small branches; nor should severe pruning at any time be resorted to. Prune little, but often, is a good rule. Varieties differ as to the amount of pruning required, and experience alone will teach the amount beneficial to each. Some varieties produce too many flower buds, and consequently all the flowers are small or imperfect. When the buds are small, many may be removed to advantage; after they have attained any growth, however, this operation is of little benefit. In this, experience must also be the teacher.

"INSECTS.—There are many insects injurious both to the stem, leaf, and flower of the dahlia; I shall, however, only mention a few of those which prove most destructive in our climate.

"The grasshoppers (Gryilidæ ——) do much damage to the blooms, by eating off the lips of the petals. To remove them by hand is difficult and wearisome; the best remedy is to turn some turkeys or domestic fowls into the dahlia plantation about the middle of August.

"The striped squash bug (Galeruca vittata) and a small oval bug (Pentatoma ——) destroy many flowers. They live in the bloom and eat holes in the floral rays, seldom leaving the flower till it is ruined. The remedies for these latter are unknown, for the flower is destroyed by the application of lime, etc. Fine blooms, or those which promise well, may be protected by a covering of gauze or lace; but this is too expensive and laborious an operation to be performed in a large plantation.

"WATERING is never beneficial to the plants, not even in dry weather, unless persistently continued; for it has a tendency to bring the roots to the surface, and when the water is withheld, the plants suffer from the change. If the dahlias are to be watered, the ground should be mulched with coarse litter of some kind, or sea-weed; this will better retain the moisture, and will prevent the earth around the plants from becoming hardened. Syringing the tops with soft water is of advantage; let it always be done in the evening; care should be taken not to use very cold water.

"SELECTING BLOOMS FOR EXHIBITION.—This is often a difficult task to the most experienced, and often one or more points have to be sacrificed. To my mind, diversity of color should be a matter of attention, with, of course, a due regard to form and size. A stand of flowers of similar colors never shows as well as one where some attention has been given to a selection of dissimilar varieties. The general rule, as before laid down, is form before anything else; next, color, which should be bright and clear; and, lastly, size. The blooms should never be handled or exposed to rough usage more than necessary, as the dead appearance thus produced can never be removed.

"FANCY DAHLIAS.—These have lately become popular, as many very fine varieties have been produced. Miss Church, Loveliness, Lady Popham, and many others, are quite as fine as any of the selfs; they are perfect gems, and creditable to

any stand of show blooms. It seems to me that the best effect is produced when the two classes are exhibited in the same stand; the contrast is pleasing, and each causes the other to appear to greater advantage.

"DEGENERATION.—A double flower being a monstrosity, there is always more or less tendency to revert to the primal state. With dahlias, this disposition is particularly marked. It has always been my practice to keep a good old variety, if possible, till a better of its shade or color was produced; yet, among a collection of two hundred and fifty, not more than five, new five years ago, can now be found.

"A striped or mottled, or other fancy dahlia, will often produce self-colored flowers, and all, both fancies and selfs, will in time so far run out as to produce single, self-colored flowers.

SEEDLINGS are grown largely by florists in England and on the Continent. Much attention has been given to hybridization during the last fifty years; but, as in other plants, many of the seedlings are worthless, and most not superior to those already grown. About six very fine seedlings in a thousand is considered good success. These fine dahlias, when brought to this country, are often worthless, producing poor flowers, on account of the difference of the climate. In this country, very few good seedlings have been produced—probably because there is less attention paid to hybridization, and no encouragement is offered by our horticultural societies.

"WINTERING.—Take up the tubers soon after the frost has killed the tops; do not separate them, but pack them away in a dry cellar in dry loam, out of reach of the frost, till wanted for propagation in the spring. In taking a retrospective view of the dahlia fancy, we find a gradual improvement up to the present time. Of late years, many of the finest varieties have been produced, and a really fine seedling commands as high a price now as at any former period. The dahlia is eminently worthy of attention, on account of its cheapness, its ease of cultivation, and the rich display it makes in the garden, when other flowers are gone.

SUCCESS IN SHEEP RAISING.

WE have met with capitalists who have invested largely in sheep, some of them buying their five, ten or twenty thousand head at the commencement, thinking they could make it pay, in accordance with the extraordinary increase known to attend this valuable animal in California. Most of these persons, thus purchasing largely, have failed to meet their anticipations, and in no long time, have been found selling off their large flocks in small parcels, as they could best find purchasers. This exactly demonstrates what has long been an admitted principle of business, that if you would achieve eminent success, it must have its commencement from small beginning; because, in the small business of an enterprise, one becomes thoroughly acquainted with all those minute details which qualify for the successful management of those of increasing dimensions.

In no department of industrial life does this rule apply with greater force than in

the business of sheep raising. Where the capitalist begins with his five thousand, or more, as may be, he is not likely to have made suitable arrangements for their proper care. The idea is entirely too prevalent, that sheep need no feeding in the winter, except what they can glean from the barren fields; then again, there will not be adequate shelter from the storms; or perhaps they are crowded into suffocating pens, so that they smother, or are infected from contact with diseased animals, which would have been removed, had they been in subdivided lots, so as to have been within frequent observation. We are satisfied that, in order to make wool growing a highly remunerative business to California, it must fall into the hands of a great number of small proprietors; or where it is under extensive ownership, it must be farmed out to persons of sufficient intelligence to learn the habits of this tender animal. Doubtless, if large sheep owners were to subdivide their flocks into not more than one thousand in each, and give them in charge of suitable persons on shares, it would be far better for the capitalist, than to have them kept in large droves, under stupid and careless hirelings.

As an instance of individual success from a small beginning, we trust we shall be pardoned for making public a statement given us by our old friend B. F. Rynders, formerly a merchant at San Antonio, Alameda county, and now a resident of Livermore valley. In December last, Mr. Rynders bought three hundred and forty American ewes, with a slight cross of French merino, and four half-blood merino bucks. The ewes cost six dollars each, and the bucks fifty each, making an outlay, for stock, of two thousand, two hundred and forty dollars. He has sold eighteen hundred pounds of wool, at twenty cents—three hundred and sixty dollars—and has four hundred and sixty lambs, worth five dollars each, as they are nearly half-blood merino, which is two thousand, two hundred dollars; which, with fleeces sold, makes the sum of two thousand, five hundred and sixty dollars, as a product of a six months' investment of two thousand, two hundred and forty dollars.

We are pleased to observe that there is a spirited controversy going on among buyers, as to the merits of a supported combination for the monopoly of the wool trade. It will do no harm to our producers, as it directs inquiry abroad as to our capacity to produce this fibril staple; and there will spring up a competition for this article as a basis for exchange. Now, the shipper cannot be expected to advance hi money for the purchase of wool, unless there is a reasonable margin for a profit—knowing he must incur the risk and expense of a procrastinated voyage, before it reaches the consumers' market.

Now, should there be a combination, so exacting as to injuriously affect the sheep growing interest, the matter is susceptible of a speedy and practical remedy. This would consist in the formation of a wool-growers' society, having its head quarters at San Francisco, which should have monthly conventions if necessary. The outlines of a plan for their operations would be, to have an agent thoroughly versed in wool, whose duty it should be to recieve consignments from the members, and have a warehouse where it could be assorted, graded and repacked in bales, subjected to a powerful compression, so as to save bulk. This agent should attend to the storage and

shipment, if he could not sell to others at satisfactory rates. Bankers would be ready to advance on bills of lading, where a certificate of the grade of the wool was attached, so that the producer would be enabled to sell his clip to the consumer, taking the chances of the most ultimate markets, merely by paying customary commissions.

The agent employed by the society should receive a steady salary, which would be paid out of charges made on the amount of wool received from different producers, in proportion and value. The matter of storage could not be any more than it necessarily is under the present desultory mode of conducting this business. A wool growers' association, while it would become protective in its operation, would be able to collect and disseminate invaluable information. The formation of a society of this kind is no new idea; we remember that such an association existed in Boston, many years since, and possibly does at this time. It was popular among the sheep raisers, and did a great deal to give some of the New England states the prosperous condition still attending this great and lucrative business. F.

INFORMATION FOR VINTNERS.

WE extract the following admirable article on the grape, from that valuable newspaper, the *Practical Mechanic:* "I have noticed an article in the *Practical Mechanic*, headed Grape Culture, stating that Mr. J. Kolber has on hand a supply of vines imported from Hungary. We have in the United States as fine and as good grapes for wine or the table as can be found in any country, and they may be had much cheaper than in any other.

"I visited Europe in 1852, and was one year on the Continent, and visited and noticed the *modus operandi* of wine making. It is simple and profitable. The wine is the pure juice of the grape (I refer to France, in the vicinity of Paris). There the climate is more like North Carolina than any other I am personally acquainted with. The wine, as I have said, is clear profit, and sold at the low price of ten to twenty cents per gallon—often at half these prices from the vintage.

"The brandy, vine trimmings, hulls after the juice is expressed, the argals, etc., are the main things depended upon to pay expenses. The vine cuttings, when charred, are used to make drawing crayons; the argals are the sediment that adhere to the cask in the fermentizing proccess. These are used for dyeing, and from which is prepared tartaric acid, etc. The juice is expressed from the hulls by tramping with the feet. The grapes are put in, and to a merry strain of the violin, or fiddle, men, women and children dance and sing. The juice flows into tubs provided for the purpose. The pulps, and also the unsound and unripe grapes, are then thrown into a vat containing water, after being bruised. The sediment or scum that arises in the first fermentation is also added, which, after a time, is distilled and makes the *Eau de Vie*, or brandy.

"A gentleman in North Carolina is now engaged in the cultivation of the grape for wine, and a number of others are preparing for it. The wine is made from the

Scuppernong grape. More or less of this has been made by almost every planter for years past—as our farmers used to have cider—for table use. This, however, was not properly made, as, after the first fermentation, whisky was added to preserve it. Wine has two fermentations—the vinous and acetic—unless spirits, or alcohol, in some shape, is added to prevent it. It does not improve after adding alcohol.

"There is a native grape in North Carolina, from which Mr. Longworth has made wine. He has a vine in his vineyard which he esteems so highly that, could he not replace it, he would not take $20,000 for it. I have the same, though not yet in bearing. I have another for the table—the only one this side of South Carolina—the clusters of which, as exhibited at the fair last season, measured twenty-seven inches in length, the grapes one and one-fourth to one and three-fourths inches in diameter, and weighing ten pounds (some exceeding this) per cluster. I have cuttings of these, and also of the Scuppernong, the Warren, the Pauline Isabella, and many Isabellas, Logans, etc., preparing for a vineyard. These are natives, and superior to any foreign grapes I have seen. Since we have these, and many others, why send for foreign vines? One gentleman in North Carolina now cultivates one hundred different varieties.

"North Carolina is well adapted to the culture of grapes, figs, etc. Land may be purchased for from three to twenty dollars per acre, which, with the same care and attention in cultivation, would produce as fine crops of grain as any of the lands North, worth upwards of one hundred dollars per acre.

"My business permits me to pass six or eight months of the year at the South, principally in Virginia, North Carolina, South Carolina and Georgia. I visit not only the cities, but every town and village, besides many plantations, and speak what I know."

KNOWLEDGE IN AGRICULTURE.—Many sound farmers despise what they call "book farming," and it is true that a man, ignorant of the details of practical farming, although possessed of a thorough scientific education, may fail in the application of some well known principle, simply because some common fact, which any farmer's boy could have told him, interfered with the successful working of a series of plans, deduced from the investigations of a hundred philosophers. But it is equally true that many experienced farmers have missed their calculations, because ignorant of some simple fact in science.

The *right* application of scientific facts and principles, has done and will do more to advance agriculture, than all the traditional gossip and empirical knowledge that could be accumulated to the end of time. C. A. E.

Editor's Repository.

Our Third Volume.—As we forward this, the first number of the third volume of the Culturist, to our former patrons, it is a pleasure to us to be able to say, that we are assured, by the remittances that are every day rolling in upon us in advance for the third volume, our labors are appreciated. We shall try to continue the Culturist a creditable journal to ourselves and the state, and hope the few who have not yet remitted for the third volume, will continue with us, and remit as soon as convenient. Enclose the money in a government envelope, and forward to our address: a receipt will be sent for it by return mail. Please observe we have reduced the terms from five to four dollars a year.

"The Wool and Hide Business of California—Who the Monopolists are.—Editor Bulletin:—The article under this caption, which was published in your paper yesterday, though essentially correct in all its details, was in one point erroneous, and is calculated, without prompt correction, to do great injury to the house of Crosby & Dibblee. These gentlemen, though extensively engaged in the wool business, not only as growers, but buyers and shippers to New York, are *not members*, I am positively assured, of the so-called combination. Their name was erroneously printed with others; whereas, it should have appeared among those who were independent buyers of wool and hides; but who have, nevertheless, been large exporters of both wool and hides, by the ships of Moore & Folger, though without being in any way concerned in the combination. With this correction, which I hasten to make, in justice to Crosby & Dibblee, I believe the article to be substantially true.—Ontario, in *Bulletin*, June 7th.

Frontispiece.—The immense importance of the wind power of California to the agriculturist and mechanic, is just now beginning to be properly appreciated. Not that its value has remained unknown till now, but that difficulties have been experienced in securing a successful application of the power; and foremost among these has ever been *regularity of motion*. A great variety of wind wheels, with their appliances, all of them termed self-regulating, have, from time to time, resulted from mechanical effort in this direction; but many of them upon trial, have not come up to the standard of excellence desired. In the wheel which we present an engraving of in our frontispiece, is found every point of excellence, except that of running with no wind at all. Cheapness, durability, power and steadiness of motion are combined in Dickerson's patent, self-regulating wind wheel; and it is from our confidence in its merits as a wind power, for the propulsion of machinery, pumping, or any of the purposes for which a cheap power is desired, that we present it thus conspicuously to the notice of our readers. We would further refer to an advertisement of the same in our addenda. W.

Fruit Favors.—D. E. Hough, of Oakland, Alameda county, an amateur culturist of strawberries and all the finer fruits of our latitude, will continue to remind us of the superiority of his products, by occasionally presenting us with *weighty* samples. We acknowledge the receipt of four boxes of four varieties of his choicest strawberries. More of the same can be procured at reasonable rates, at his fruit stand in Washington market. W. & F.

Cherries.—The gentleman who sent us a box of superior cherries, from Santa Clara, accompanied by a request that we would not publicly announce his name, will please accept our warmest thanks. W.

Rhubarb Wine.—We received, a few days since, some choice samples of wine, from Mr. T. Worthington, of Grass Valley; also specimens of the rhubarb plant from which wine is manufactured. We were not prepared to expect so delicious a beverage from the simple products of rhubarb juice and sugar, with the little age it has. Many persons would consider it too sweet, a defect—if it is one—that age will remedy. As a home product, within the reach of all possessing a single rood of garden ground, we pronounce it excellent and highly desirable—or would be to *us*, even in considerable quantities. Who will try us on this point with a few more bottles? The specimens of the plant accompanying the wine, were the largest we ever saw—the leaf stalks being from three to four feet in length; they are of the Victoria variety, and surpassing anything the world has ever known before in this line. W. & F.

Sonoma County Horticultural Society.—At a meeting of this society, held at Oak Hall, in the city of Sonoma, on the fourteenth ult., the following persons were duly elected officers of the society for the ensuing year: President, A. Haraszthy; Vice Presidents, Dr. J. H. Hill, Gen. M. G. Vallejo; Secretary, L. Wratten; Treasurer, Fred. Leiding; Directors, D. S. Bryant and Wm. M. Boggs. The society, as we are informed, is in a flourishing condition; the object being the introduction, acclimation and dissemination of all known and valuable exotic, or foreign fruit trees, plants and vines. The society has now under culture large numbers of walnuts, almonds and grape vines, of foreign varieties, and has recently received an importation from the agricultural department of the Patent Office, Washington, containing, among other desirable acquisitions, some thirty living plants of the Egyptian seedless grape. Such a society, upon a proper basis and properly conducted, cannot but prove of the highest possible benefit to the future pomology of California. We heartily wish it the fullest success. W.

Querry.—Messrs. Editors:—Please tell us how to manage, in order to get a hedge of the Osage orange started, and thereby oblige A Reader.

The Osage Orange is usually grown—for hedge purposes—from seeds; but it will grow from cuttings under favorable circumstances. If from seeds—which is the most desirable mode—they should, if possible, be planted in the place where it is intended the hedge shall be and remain, and particularly is this rule applicable to California. It is all important to the success of hedging, that the plants have at all times, a sufficiency of moisture; and to secure this in all seasons, and in our peculiarly dessicating climate, with no advantages for irrigation, the growth of the tap-root should be favored; and nothing contributes more to this, than planting the seeds of trees in places where they are to remain; besides adding greatly to the health and consequent long life of the trees. Where such a mass of foliage is to be sustained as is found in a strong, heavy hedge, it requires not only a like mass of roots, but a continued fer-

tility of soil. It is more trouble to start the hedge in this way, than from seed planted and cultivated for one year in the nursery row; but with this single exception to the practice, it is infinitely better. In either case, plant in winter or spring, in good and well-prepared soil; cultivate as you would apple trees for one year. In the spring of the second year, cut all back to eight or ten inches of the ground, and thin out, so that the plants stand sixteen inches apart in the rows. The cutting back must be performed in order to force a horizontal growth near the ground, while the plants are young, or it never can be done, or but imperfectly. The second spring they should be again cut back, and something like form can be given to the hedge, which should be carefully maintained at every annual pruning (or rather clipping) afterward. The fourth year will show a hedge of the Osage orange, if it has been properly grown, that is nearly proof against bulls or boys. The only objection to the Osage orange for hedging, in fertile and moist soils is, its extremely rampant growth, too much inclined to tree, instead of bushy growth. The seeds can be procured of the seedsmen who advertise in the CULTURIST. W.

HUNGARIAN SEEDLESS ONION.—We saw growing on the grounds of John O. Garrett, Sacramento, a field of this new onion, which is a curiosity. They are propagated by planting one of the onions, which sends up from the base where the roots start out, a great number of shoots, which completly split the onion to pieces. These shoots become onions, and there will be as many as a dozen good sized onions produced from one—they literally being piled up in a heap as they naturally grow. We have a bunch of them at our office, where the curious are invited to call and see them. Mr. Garrett took six tuns from a quarter of an acre, and has raised two crops from the same piece of land within the year. F.

PROPAGATING THE HONEY BEE.—EDITORS CULTURIST:—There are two methods by which the honey bee can be successfully propagated, viz: Natural swarming and artificial division, each of which have their peculiar advantages. The following are some of the advantages of the former: First, an increase of bees, usually in proportion to the amount and duration of pasturage. If the latter is abundant, then bees increase rapidly; but if scarce, there will be but little increase, and not unfrequently a decrease in the number of hives of bees, caused by starvation and its attendant evils. Hence, if natural swarming is relied on, no country can ever be overstocked, except by importation. Second, this method is best suited to the wants of the novice, there being but little skill required to hive a swarm or remove honey boxes when full. Third, bees consume less honey when undisturbed, consequently, they are generally provided with food to last them through a season of scarcity. Fourth, in districts where foul brood exists, natural swarming is the only safe plan for all bee keepers to adopt, in order to maintain their stocks. The superiority in this case is owing to the fact that swarms only separate naturally from the parent hive, at a time when pasturage is abundant; consequently the unsealed honey, of which the bees fill themselves preparatory to swarming, is new gathered, and hence is not likely to absorb the infectious matter in so short a time. And further, the bees flying for a considerable space of time before clustering on a tree, purify themselves, and are thus hived; whereas, if driven, (unless repeatedly) this conld not take place; hence, the atmosphere in the hive they are put into, is thereby vitiated, causing the disease to appear at a remote period. Fifth, by following this system, the opening of hives would in a measure be dispensed with; and by allowing no weak swarms to exist or honey to be exposed, robbery would, in a great measure, be prevented, and thereby stop the spread of the disease.

The advantages of the dividing system are, first, a large increase of bees, consequently of honey; this, however, depends on the supply of pasture. Second, the divisions can be made at

any given time without the loss usually incurred, both by swarms flying to the woods, and of time spent in long continued watching, in order to secure the emerging swarms.

[*Caution to Bee Owners.*—As soon as foul brood is found to exist in an apiary, or the bees suspected of having obtained infected honey, at once cease to divide them, also to interchange combs between hives. No combs or honey that are suspected to have been derived from infected stocks should be given to those that are healthy.]

There are other advantages that might be claimed for each system, as well as disadvantages attendant on them. In conclusion, I would state that I have practiced both systems for many years, and find that, all things considered, a combination of them gives the best results. However, natural swarming exclusively, cannot compete successfully with artificial division, if both are in the hands of skillful apiarists. J. S. HARBISON.

MOMENTS WITH THE BUSY BEES.—We can write *feelingly* upon this subject, having had several of them get in among our hair, during an examination of a hive at the apiary of N. W. Palmer, of Alameda. Our intercourse with the little fellows was brief and *pointed*, and our acquisition of knowledge gained from them was of a sensitively *intellectual* character, and Fowler and Wells could but express surprised admiration of the phrenological developments our cranium was subjected to in consequence thereof. Mr. Palmer is meeting with great success in the management of his bees this season. He has fields of buck wheat near his apiary; but the bees do not seem to work on it much, as they appeared to fly over it to a low piece of land where there was a great deal of mustard and quantities of wild flowers. From Mr. Palmer's, we went to the apiary of J. D. Woolsey, of Oakland. Here also the bees were doing well, and were working on the raspberry blossoms, of which there are large fields on his grounds, and in the surrounding neighborhood.

Our next call among the bees was at the great apiary of A. J. Bigelow, Sacramento, and as this is one of the pioneer establishments, some little account of his mode of management may not be uninteresting. Mr. Bigelow uses the Langstroth hive, having a honey board on top, with a cover over this for extra honey boxes, with some other improvements, among which are having a bevil on each side of the bottom of the frames to keep them equi-distant, so as not to jam the bees on moving the frames. On the inside of the frames a line of wax is run through the middle, called a comb guide, to which they commence building. This prevents their building on the edges of the frames, and gives greater uniformity to the comb. Mr. Bigelow's mode of transferring is to take a strong swarm, where the hive is well filled with comb, into a screen house, which is to prevent robbery by other bees during the operation. This hive is then opened and one or two frames with some comb on them are put in an empty hive, and all of the bees are brushed out of the full hive into the empty one. This new hive is then taken out to the apiary and put on the stand where the full swarm came from. The old hive, now full of comb and without any bees, is put in place of another strong swarm, which is moved to a new place. Now, the bees of this latter which are out at work, or in the hive at the time of moving, and have never before been out of the hive, will, as soon as they go out of the hive, return to the old spot and take possession of the hive which has been placed on their old locality. This would depopulate the hive moved to a new place, but for the large number of young bees in it, which seldom go outside of a hive until ten days old: these become its permanent inhabitants. Queens are given swarms as their necessities require.

Mr. Bigelow complained of a scarcity of bee pasture, and was feeding with Chinese sugar. We think natural bee pasturage will be found the greatest obstacle to the success of this business on this coast, and all persons desirious of seeing this interest prosper, should take hold earnestly in devising means of increasing it. It is known that the bee feeds on the buckeye blossom,

som, and as many of the hilly and mountain districts of the state grow this tree in great quantities, this may be a valuable tree to cultivate as a hedge, in place of fences on our great plains. Now is the season when the bees are working the buckeye, and we hope some apiarian will test the honey made from these blossoms, and send us a statement of its qualities. F.

The Curled Leaf.—Editors Culturist:—I noticed in the June number of the Culturist, an article on the "Curled Leaf." I do not pretend to say that I understand the *cause* of the snbject in question; but I will, with your permission, give you the opinion of a much esteemed friend, recently deceased; and every one who knew him felt assured that his opinions were entitled to respect, as he was certainly the most skillful gardener in the vicinity of Boston, Mass., for many years. One day I inquired of my friend, if he could tell me what caused the leaves to curl up as they did, upon a favored tree. The fruit was just set at the time, and some of it turned yellow and dropped off. He told me it was the work of an extremely minute red spider, which deposits a substance upon the leaves, the effect of which we see. The spider is so small that you need a glass to make an examination. We looked closely and found one, and I have frequently seen them since I have been in California; and always destroy them, as I feel sure they cause a great deal of mischief. I asked, what must be done to the tree, and was directed to procure some air-slacked lime, and scatter it broadcast over the entire tree, let it remain for two or three days, then apply water by means of a hand hose and sprinkler—the operation to be repeated until health was restored to the tree. We followed his directions to the letter, and in a little time the tree was restored to its full vigor, and bore some of the finest of fruit that year. The following spring, as soon as the leaves were well set, we again applied the lime, thinking with the old maxim, that "an ounce of prevention is worth a pound of cure," and were rewarded by an abundant crop of the most delicious fruit. I know that this is a single instance, and may not interest any; but still, if a single individual is induced to apply the remedy, and thereby saves a single tree, I am happy in having cast even this mite into your treasury.

C. E. F.

Peach Leaf Curl.—Messrs. Wadsworth & Flint:—*Gentlemen:* I have the pleasure to forward to you four dollars, subscription for the third volume of the Culttrist, fondly anticipating that its successive pages will afford me as much instruction as the past were satisfactory.

In your January number I have submitted to your readers a synopsis of my experience, in reference to the peach leaf curl, with the hope that it would call out a rigid inquiry into the causes, and perchance some experiment may acquaint us with a preventive of this disease. The increased injury to peach orchards this season, was chronicled all over the state, with copious diagnoses and recipeing as wonderful remedies, for the restoration of the normal organic functions of the crisped peach leaves. The deductions of F., on the 544th page of the Culturist, do not coincide with my observations: a number of trees in my orchard, which were not pruned, and they were very leafy trees, have suffered the most; so insufficiency of foliage to absorb all the sap from the roots, cannot be the cause "the pressure of sap collapses the sap vessels of the albumenous shoots which have not been hardened;" besides, he admits "that peach trees pruned in the spring or in mid summer," consequently despoiled of their superabundant foliage, "suffered less from the curl." I have indubitable evidence that the season of pruning has no influence on the disease; but rather that trees closely pruned, suffer less, as after the curly season, there is a superabundance of material furnished by the roots, to supply a new growth of leaves and perfect the fruit. In the whole process of malformation, I cannot discover any implied "collapse;" but rather a certain disruption of the cells, causing an exudation of sap, and consequent disorganization of the structure of the leaf.

The assumption of C., on page 387, that the peach curl is not caused by insects, assumes "reasons" from alleged facts, which most certainly do not coincide with my knowledge—first, there is any amount of insects, as ants and others, during the curling season; and there is especially one, a little dimmutive black fellow, closely resembling an ant, which I apprehend will furnish me next season, Providence favoring, a *corpus delicti*. Second, insects do show a decided preference for different varieties of the same species of plants, and are very dainty gourmands. Third, many being of nocturnal habits, it is very difficult to ascertain their food or habits. During several years, and this spring in augmented ratio, I have noticed the fruit buds of the peach perforated, and the central part of the bud ate out, without being able to find the culprit. My orchard is remarkably protected from the prevailing winds and late frosts in the spring; still, from forty to fifty varieties of peaches, I have only a few seedling varieties, also the Smock and the Snow peach, which, so far, are entirely exempt from the curl.

I have no data justifying me in assigning the cause of the curl to climatic changes. In the year 1856, from the twenty-seventh of February to the sixth of March, the peach trees, being in full bloom, there was a succession of night frosts, several nights so severe as to form ice one-eighth of an inch thick, without injuring the fruit, and there were but a few curled leaves on some trees. The present year, during the florescence of the peach, the weather was remarkably equable and free from frost, yet, with the exemption of the mentioned varieties, all of my trees are more or less injured. From this and other data, too voluminous for publication, it is assumed that the disease is propagated originally from the native California seedling trees; that it is on the increase from year to year; that it manifests itself by the disruption of sap vessels; that it effects not only the end of the shoot or a budding out, but also on a full grown leaf; that it is possible to be caused by the germ of certain fungus, taking hold and developing itself on the leaf, sometimes also on the fruit, judging from analogy, but from the appearance of the leaves of varieties which do not curl, it is probably caused by the sting of a minute insect. It would be very interesting to find out the real cause; still, from the nature and extent of the disease, we could hardly expect to find a more practical or acceptable mode of prevention or remedy, but to cut down and burn all the diseased trees; and as experience demonstrates that there are varieties, which, from the peculiar structure of the leaf, are not injured by the curl, propagate only such, budding them on the hardshell almond seedling, which forms a remarkably thrifty growing tree.

Yours Respectfully,

MARTINEZ, June 16th, 1860. J. STRENTZEL.

ANOTHER'S VIEWS OF THE LEAF-BLIGHT.—In conversation quite recently with Mr. S. W. Shaw, a vine grower of Sonoma, but who has given much attention to the appearance and progress of the peach leaf-blight, during this and previous seasons, he gave it as his opinion—first, that trees growing in very moist, rich soils, likely to produce an excessive flow of sap, at the season of the tree's leafing out, are more subject to the blight, than those growing upon dryer and less fertile soils. Secondly, that when cloudy weather predominates, or is in excess over ordinary seasons, then the blight appears more general, and is as certainly checked in its progress as soon as a brighter sunshine prevails. His theory is, if we have not mistaken his views, that an excessive flow of sap is thrown into the newly formed leaves, and which, from a lack of atmospheric heat and sunshine, but particularly the latter, which every vegetable physiologist knows to be essential to the health of plants, the sap, in its overabundance, is not properly elaborated or digested, fitting it for the formation of new wood or the nutriment of the growing fruit: the disease being very like congestion in animals, which Webster defines as "an unnatural accumulation of blood in any part of the body, or any subordinate system of parts." Mr. Shaw's view is, that the

unnatural accumulation of sap is caused by a deficiency of sunshine, by which alone the juices or sap can be fitted to fruit growth; the effect is an excessive inflation of the sap lobes of the leaf, occurring upon any part of the same, in the middle, at either end or side of the leaf, as it may happen, from its organization, to possess the least power of resistance; but when once commenced, seems more easily communicated to adjoining lobes, till all parts of the leaf are affected.

Mr. Shaw is not yet prepared to advance an opinion, or recommend a practice, as a preventive or remedy for the disease, as affecting the tree or its fruit for the season of its infection; but would recommend, in order to save the tree in comparative health, and more likely to produce fruit the following year, that the moment the trees show certain signs of being violently attacked, to cut back closely and severely the entire limb system of every tree attacked, when a new growth of strong, vigorous wood is produced the same season; and unless the same cause recur the following spring to produce the disease anew, a finer crop of fruit may be expected, than though the cutting back had not been performed. W.

Alameda County Fair.—Circumstances unavoidable, prevented our attendance upon the late fair at Oakland; we were present only at the first trial of reaping and mowing machinas; cannot, therefore, speak from personal knowledge of the exhibition at the pavilion, or of the stock at the animal show grounds. We are assured, however, by those who did attend, that the entire exhibition was highly creditable to the agriculturists of that fine farming and fruit growing county. That financially, the fair was a decided success, and passed off greatly to the satisfaction of those immediately interested in its results. We acknowledge the receipt of a complimentary ticket to the fair and ball. The officers of the society for the ensuing year are, President, Samuel B. Martin; Vice Presidents, Frank F. Fargo, Alfred Lewelling; Secretary, Edward Hoskins; Treasurer, Harry Linden; Directors, G. W. Fountain, J. Lewelling. W.

The Great Trial of Reaping and Mowing Machines.—We learn from the *Alameda County Herald*, that the test trial between T. Ogg Shaw's and the Manny reaping machines, which came off in that county recently, resulted in favor of Manny's machine. The public should know this, because, if we have not yet a home-manufactured article that can compete with the imported, some enterprising and skillful mechanic amongst us would do well to turn his attention in a direction that would result in the getting up of one that will be equal to the best. Next to the Vermont mower and reaper, which we believe stands at the head of the list of mowers and reapers, probably Manny's machine is the nearest its equal; the late trial would seem to establish this as an undisputed fact. Farmers should be cautious and procure none other than the best machines, adapted to a California growth of grain. They are two costly an article to throw away money upon. W.

A Proposition to Land-Holders.—A person in possession of a large quantity of fruit trees, consisting mostly of standard dwarf pear trees and apple trees, and also of five or ten thousand grape vines, wishes to plant the same out in some good location, where he can purchase his land by setting out an orchard or vineyard on adjoining lands for the seller or *owner*. He would prefer to take charge of the *owner's* grounds for two or three years, to insure a favorable result. Having had several years' experience in fruit growing and tree raising in California, he thinks this an excellent opportunity for a land owner to get an orchard at a moderate expense to himself. For particulars, inquire of the editors of the Culturist. W.

Sale of Diseased Bees.—We would caution those who desire purchasing bees the present season, against a serious imposition likely to be practiced upon them by unscrupulous vendors. There will doubtless be an attempt to dispose of bees, known or suspected to be affected with the disease known as "foul brood." The public should know that this disease among bees, is on the increase in California; that it seems to possess an intermittent character, one generation being badly affected, the succeeding one in the same combs comparatively free, whilst the next may he bad again. Atmospheric influence is believed to play an important part in its development, where it has once gained a lodgment. Some bee keepers seem to be impressed with a belief that the disease will leave us; but this is only "hoping against hope." It is a disease so baneful in its effects, and so certainly injurious to the bee keeper's interest, that persons who sell bees ought to secure purchasers against loss, provided it results from disease contracted before purchase. W.

Bay District Society.—The board of managers of the San Francisco Bay District Agricultural Society held their regular monthly meeting at the office of the secretary, in San Francisco, on Tuesday, the twelfth inst., when there was present nearly a full board. Most of the session was devoted to the preparation of a premium list, which will soon be ready for publication. The board will offer one of the most extensive and liberal schedules ever presented in this state, and intend that the first exhibition of this society shall be second to none California can boast of.—*Alameda Herald.*

Dates of Holding County and District Fairs.—*Contra Costa County Society*—At Martinez, to commence Tuesday, September 25th, and continue three days.

Santa Clara Valley Society—At San Jose, to commence on Tuesday, September 18th, and continue four days.

Sonoma County Society—At Petaluma, commencing on Tuesday, September 4th, and continue four days.

San Joaquin District Society—At Stockton, commencing August 28th, and continue four days.

Bay District Society—At San Francisco, to commence Thursday, October 4th, and continue five days.

To Kill Cockroaches.—Mix equal quantities of red lead and Indian meal with molasses, making it about the consistency of paste. It is known to be a certain exterminator of roaches. A friend who was troubled with thousands upon thousands of them, rid his house of them in a very few nights, by this mixture. Put it upon iron plates, and set it where the vermin are thickest, and they will soon help themselves, without further invitation. Be careful not to have any article of food near where you set the mixture.—*Exchange.*

Neutralizing Poison.—A poison of any conceivable description and degree of potency, which has been intentionally or accidentally swallowed, may be rendered almost instantly harmless, by simply swallowing two gills of sweet oil. An individual with a strong constitution may take nearly twice the quantity. This oil will most positively neutralize every form of vegetable, animal or mineral poison with which physicians and chemists are acquainted.—*Exchange.*

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending May 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By Thos. M. Logan, M. D.

MAY, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	30.280	30.256	30.231	30.280 inches.	+ 0.085 inch.
" Minima	29.723	29.762	29.730	29.723 "	— 0.008 "
" Mean	30.013	30.000	29.987	30.000 "	+ 0.015 "
Thermometer, Maxima	62.00	70.00	63.00	70.00 deg.	— 8.10 deg.
" Minima	46.00	54.00	50.00	46.00 "	— 4.90 "
" Mean	56.00	61.90	57.54	58.48 "	— 4.42 "
Force of Vapor, Maxima	.413	.483	.446	.483 inches.	— .081 inch.
" " Minima	.238	.191	.191	.191 "	— .016 "
" " Mean	.342	.383	.344	.358 "	— .020 "
Relative Humidity, Maxima	87.00	81.00	87.00	87.00 per et.	— 2.82 p. ct.
" " Minima	65.00	41.00	41.00	41.00 "	+ 9.64 "
" " Mean	75.84	68.77	73.35	72.65 "	+ 5.36 "
Number of Clear Days	12	11	10	11 days.	— 3 2-3 days.
Number of Cloudy and Foggy Days	19	20	21	20 "	+ 7 "
Number of Rainy Days	.....	.....	.....	10 "	+ 4 2-3 "
Quantity of Clouds	4.2	3.8	3.8	3.9	+ 1.0
Quantity of Rain and Fog	.....	.....	.....	2.491	+ 1.326 inch.
1st Days and 2d, Force of N. Wind..	3	1.3	3	1.0	3	1.2	— 1-3	— 0.8
" " N. E. Wind.	2	1.0	0	0.0	0	0.0	0 2-3	0.7	— 2-3	— 0.6
" " E. Wind....	2	1.0	0	0.0	0	0.0	0 2-3	0.7	0	— 0.2
" " S. E. Wind..	5	1.0	4	2.0	2	1.5	3 2-3	1.7	— 1	0.0
" " S. Wind....	10	2.0	8	2.7	8	1.7	8 2-3	2.1	+ 1	— 0.2
" " S. W. Wind.	3	2.0	6	2.0	6	2.5	5	2.2	— 1 1-3	— 0.2
" " W. Wind...	5	1.6	7	2.4	12	1.5	8	1.8	+ 5	+ 0.4
" " N. W. Wind.	2	1.0	3	1.7	0	0.0	1 1-3	0.9	— 2 2-3	— 1.2

Thermometrograph.

	Deg.		Deg
Highest Reading by day on the 8th	74 00	Mean of all Highest Readings by day	63 51
Lowest Reading by night on the 6th	37.00	Mean of all lowest readings by night	47.48
Range of Temperature during month	37.00	Mean daily range of Temperature during mo.	16.03

Remarks.—The weather of the past month has been altogether exceptional. As will be seen in the table above, not only has the temperature ranged considerably lower than the average of the last eight years, but the number of cloudy and rainy days has been greatly in excess. The amount of rain that has fallen is found unprecedented for the month of May, as far back as our register reaches, and the earliest settlers do not remember to have ever witnessed such copious showers so late in the season. Nearly two and a half inches of rain are thus contributed to swell the aggregate for the season, which now sums up to 22.035 inches—the greatest fall experienced since the memorable winter of 1852–3. Owing to the persistence of the cold—white frost having been seen in the city as late as the 12th of May—the effect of these abundant rains has not been to produce any remarkable rise in the river; from which observation we infer that there is an abundant reservoir of water, in the shape of snow, laid up for agricultural and mining purposes during the summer, in the mountains.

THE ELK OF CALIFORNIA.

THE CALIFORNIA CULTURIST.

AUGUST, 1860.

USEFULNESS OF FAIRS.

IT is beyond all dispute, a fact, that where industrial fairs were first instituted and have been continued through a considerable period of time, that the contiguous neighborhoods where they have been held have made the greatest progress in the mechanic arts and a theoretical and practical knowledge of agriculture. The origin of industrial fairs for the show of agricultural productions, mechanical implements, and articles pertaining to the ornamental and useful arts, dates only to a recent period. So called fairs, among which may be mentioned the great industrial ones of Leipsic, date back successively to a remote period, but these are more properly to be denominated market fairs, as the object has been to bring together purchasers from all lands and climes, so that there could be advantageous disposal made of the wares concentrated for the occasion.

It remained for a few horticultural enthusiasts of Massachusetts, within the past half century, to successfully demonstrate the advantages to be derived by the public at large from periodical exhibitions of industry, where, through a generous spirit of emulation, neighbor contended with neighbor, in friendly contest, for tokens of award for superior excellence in the departments in which they were competitors. At first, these efforts to bring the people together for an annual show of their industry met with little favor, but those who originated the movement were men of sagacious and indomitable minds, and they had the satisfaction to discover at the outset that these exhibitions greatly stimulated invention and created an inquiry with regard to scientific agriculture.

Following in quick succession, various countries and states instituted similar shows, and it may be stated that their first fruits were the establishment of journals and magazines devoted especially to scientific and agricultural pursuits. Nor is it less

worthy of note, that the amazing progress which the United States have made in inventions has taken place mainly since the permanent establishment of fairs; and it may be truthfully asserted that from these has grown up that important bureau of the national government, the department of the Interior: and when one goes through that most wonderful of all human temples, the Patent Office, the evidence becomes conclusive of the important part fairs have enacted in producing all the accumulated wonders found therein. The agricultural reports annually published by Congress in book form, and distributed all over the nation, are mainly made up from the proceedings of county and state fairs. We might dwell at great length upon the influence industrial exhibitions are exerting upon the social and political happiness of our people wherever they are in vogue; and it is gratifying to state that our great national exhibitions are doing much to allay party rancor, as they serve to illustrate to all sections of our diversified country, the immeasurable benefits each has in its power to confer upon the other, by an exchange of the commodities either produces most favorably and requisite to the comfort of the other. No occasion is more opportune for the planting of friendships long severed; and it is a fitting time, too, for the formation of an acquaintance, which, if not oftener, may joyfully look forward to an annual greeting.

We gladly welcome the various days of the year, which have been set apart from time immemorial as holidays, and yield to none in enthusiasm for the fourth of July; yet we confess a growing preference for the annual fair as *the* cherished period most exurberantly joyous of swiftly passing time. Nor do we think we are alone in this feeling; we can trace as footprints to each returning fair an expectancy of hope-inspiring pleasure in the looks of our young people as they talk over the matter months before the time comes round. Our citizens are fond of the marvelous and full of sight-seeing desire, and many are not like Mahomet, they can't go to the mountains, and if mountains cannot be brought to them, there are a great many things worth seeing that can be gathered for an occasion, so that in a few hours one can have the satisfaction of seeing what it would likely take a year to go and see at scattered, isolated localities.

While it is becoming generally admitted that fairs are public benefactors, some difference of opinion exists as to what character of such exhibitions are the most beneficial, it being urged that local or county shows do more good than general or state ones. Without expressing any opinion upon the question, we beg leave to state that we regard the first as an auxiliary to the latter, and that the latter are necessary adjuncts to national or industrial ones. Can it be supposed that McCormick's reaper would have gained its world-wide renown had it never been outside of Cook county, Illinois? The great industrial exhibition at Paris gave it a celebrity which excited the inventive genius of civilization; and we have, as a result in our own country since then, numerous inventions in the line. We are of the opinion that state and national fairs should be held after all of the county fairs are over, so that those articles exhibited in the county fairs, which were of the highest excellence, could be sent to the state fairs for competition. An article of manufacture or agri-

cultural product may be the best on exhibition in a county, yet still be inferior to those seen in some other county fairs. Now it would only be of local advantage to the manufacturer of an implement to advertise that his was the first premium article of the county where it was made. If he has an implement or animal of superior excellence, the highest award of a state fair would be of tenfold more intrinsic value, as it gives him a general as well as local repute.

In California, fairs have become of first necessity to pomologists. We have received our fruits from all quarters of the globe, and necessarily great confusion exists with regard to nomenclature. A particular variety may be found adapted to our climate, and still this variety, being under numerous synonyms, may be rejected for the recommended kind, while a false one, wrongly bearing the name of the favored variety, will be substituted in place of the true one. Were the orchardists to send from all parts of the state average specimens of all their fruits, competent committees would in a few years be enabled to establish a schedule of varieties true to name, and determine which were most suited for the various localities. This would be of incalculable benefit to nurserymen, and would enable those planting orchards and vineyards to invest their means with a greater certainty of success.

Much reluctance is manifested by fruit growers to exhibiting at the fairs in California, because that they have been held for so long a term that the fruits perish, subjecting the exhibitor to serious loss, and to the mortification of seeing his fruits on the tables in a perishing condition, which compels him to renew his display in order to have it appear at all creditable. This complaint was general at a former great fair of the Mechanics' Institute in San Francisco, and at the last state fair held in Sacramento. We perceive that the managers of the state fair have reduced the time for the ensuing show, so that there can be no cause of complaint in this respect, and as a pomologist, we had hoped that the Mechanics' Institute would have adopted a like course, if it was their intention to have an exhibit of horticultural products at their approaching exhibition. We believe that great exhibitions go off with more eclat when the entire interest is concentrated into a brief period. The public seek novelty, and weary of any spectacle, however attractive, when it becomes so prolonged as to assume the routine of every day life. F.

Silk Culture.—In our letters to Governor Downey we suggested the encouragement of the silk culture in California, for which the climate and soil are admirably calculated. The *Culturist* opens its July number with an excellent historical article on "silk culture," from which we draw largely. Of course this is a "dull theme" to the great reading, writing, and speechifying world. Any thing useful to mankind is counted a bore in the evening assemblies, or in the general education of the young. Yet how admirably adapted is the management of the silk moth to the delicate hands and patient nature of women; and what useful pride might not be created in the female imagination, to cloth its fleshy mold in home-manufactured silk.—*Mooney's Folsom Express.*

TEXAS AND CALIFORNIA COMPARED.

IT may be admitted that the most remarkable era in the history of the American republic is that which saw the annexation of Texas and the conquest of California, co-incident acts in the great drama which the Anglo Sax-American is playing in the western hemisphere for dominion. The first of these acts was of sufficient moment to agitate the diplomacy of Europe, and render an appeal to the sword, by Mexico, a vain endeavor to prevent its accomplishment. There can be no doubt but the pioneer settlers of Texas, from their first establishment in that country, entertained the expectation that this land would in no long time become an integral part of the United States, and as they progressed, it was found that similarity of soil, production, and habits of the people, rendered it a matter of growing necessity that their political allegiance should be changed from the palsied, imbecile Mexico, to that of the American Union, now of all nations most intensely charged with the electricity of the times.

The proximity of the south-western states gave impress to the character of the institutions in the new republic, and by common consent there was incorporated into her domestic economy an involuntary system of labor, which enabled her people to produce cotton in such quantity and of so superior a quality, that it was seen in commercial circles that the young republic was destined to commanding importance. For a century her deltas had never been penetrated by the Spaniard who held nominal rule, and it was only when American outlawry had expelled beyond the border, children of misfortune and crime, that her impenetrable thickets fell before the woodman's axe, and his camp fires swept away cane brakes that had rotted from time immemorial.

The vast extent of the country, and the prospects indicating a great source of supply of cotton, excited the cupidity of English statesmen, and her diplomacy was active in its exertions to bring about an arrangement whereby the country, while securing a nominal independence from Mexico, would become a dependent of Great Britain. This probably would have been accomplished, but for the policy the British government was known to entertain with regard to the abolition of the slave trade. Texas needed slaves to cultivate her soil, and there were only two sources of supply—either the re-opening of the African slave trade, or annexation to the United States. The former was declared piracy by the law of nations, so the latter was the only alternative.

It was rightly judged that after the republic should have merged its allegiance to the American confederacy, that there would take place a great emigration from the impoverished districts of the old slave states to those cheap, rich and productive lands; arguing as men did, that under the Union there would be greater security for life and property. These expectations are being realized, for no sooner was annexation accomplished than there set in from the southwestern states a tide of emigration for which we may in vain look for a parallel. It will never ebb. The inevitable drift of the descendants of Ham is towards the equator, and whether we glance at

the north or south of Africa, we find the Britain or Gaul, each in his sphere, driving them back to the equatorial line. Under French or English policy, where caste is abolished, the feebler race retires in despair before the steady and omnipotent march of civilization. With these nations, experience has demonstrated that a superior and inferior race of people cannot exist in the same community on terms of social equality to mutual advantage; hence there arises an irrepressible conflict between the races, and the superior caste will adopt that policy which will tend most rapidly to the extinction of the inferior race.

The condition of the two races in the United States is entirely different, the prevailing status being bond and free. Thus the two races exist under a system that harmonizes; the one being the unquestioned source of power, commands; the other as readily obeys. It is one of the remarkable features of American progress, that the African negro, the only being among the races of men who could be subjected to involuntary servitude and thrive under the condition, should have become a chief instrument in the work of clearing our tropical forests, and producing from their malarious beds the febrile plant which has had so much to do with the prosperity of nations for the past half century; and he seems in the fulfillment of a special destiny, when it is seen that he prepares the way for the ultimate occupancy of these lands by the white laborer, after he shall have set loose the miasma from the virgin soil; and it is a no less remarkable fact in our history, that in its earlier stages, the presence of negro slavery in the domestic economy was attempted to be discouraged on account of its moral aspects, rather than as it affected the price of voluntary labor. But with the rapid increase of labor-saving machinery, there began to rise through the states having but few slaves, a conflict between the advocates of free and involuntary labor.

The free laborer saw that machinery was driving him out to seek other sources of employment, and he was forced to turn his attention to the production of raw materials for the manufacturer.

Thus, on the annexation of Texas, it was found that slave labor could be far more profitably employed on the rich lands of that state than in the worn out fields of the old cotton states. This produced a great movement of slaves from the northern slave states towards the southwest, which left vacant a new field for the free labor of more northern and densely populated districts, which were being crowded with an excess of laborers, owing, as before stated, to the rapidly increasing uses of labor-saving machinery. We believe that this movement of our slave population is to keep due onward towards Central America, and that in this manner alone can it find a peaceful solution.

If we study the physiology of the races, we shall discover that mankind are ultimately to become all white. This tendency has been rapid since the dawn of Christianity. Wherever two races, one white and the other colored, have come in contact, they may be likened to the Mississippi river and its tributaries. The "father of waters" may be said to be the white element, into which countless streams discharge their discolored volumes, with scarce perceptible effect. Eddies

here and there may awhile ripple, in clouded aspect, but a physiological law, ordained at the creation of man, has determined that "man created a little lower than the angels" shall return to original purity.

Momentous as was the annexation of Texas to the United States, testing as it did the expansive character of our confederation system of government, it was but the mere prelude to that second act of the drama which accomplished the conquest of California, and the consequent development of her gold fields.

Texas and California may well claim the appellation of rival states, if the extraordinary progress which each is at this time making in many of the great branches of productive industry gives token of what will inevitably be their future. Nearly equal in extent of territory, and occupying the extreme southern position as states on opposite sides of the continent, with climate and soil in some respects alike, they afford the grand spectacle of an allied race of people, coming into the possession of two great fertile regions almost at a simultaneous period, and under circumstances entirely dissimilar in the character of the labor which is to develop their resources. One has for her motto, "cotton is king;" the other, "gold is king." We will concede that king cotton is likely to maintain his throne longest, because it is apparent that with the rapid increase of population in California, there is scarcely a perceptible addition to the annual gold crop; whereas, in cottondom, the production of the great staple is in increased ratio with that of population. Each is the staple product of their respective states, and are alike exhaustive of their sources of supply. It doubtless will be regarded as a hazardous prediction to state that in our opinion the day is not distant when either state will receive more net profit from their clip of wool than from gold or cotton. Although the cotton districts of Texas are of vast extent, they occupy but a small portion of that great state, being limited to the coast and the margins of the rivers in the middle and eastern sections. The high and rolling table lands, although fertile, are not to be depended on for cotton, as the meteorology of that part of the continent is of such a character as to subject the country to the vicissitudes of seasons of unusual drought. But there always is sufficient rain in the winter to produce an abundant growth of nutritive indigenous grasses, thus rendering the state highly advantageous for stock growing. In our opinion, based upon several years' residence, and a familiarity with all portions of the state, no country possesses equal advantages with Texas for stock growing; and in this category we do not except California. We know a cotton planter who sold his plantation and most of his hands, and invested the proceeds in Mexican sheep, having also sent to the northern states for merino bucks to cross the breed. After a fair trial, he informed us that he was satisfied that he could produce more pounds of wool on the capital invested than of cotton.

The state of Texas has grazing lands sufficient to feed one hundred millions of sheep, without infringing upon those adapted to agricultural purposes, and in her cotton and wool, Texas is destined to become the largest fibre producing community of the world. But to accomplish this position, she needs a manual labor power, which can only be had at present in limited supply. Texas also to some extent may

be called a wine-producing land, as her climate and soil are admirably adapted to the growth of the vine. We have traveled for leagues alongside of her river margins, where the grape hung in festoons from giant tree to tree, prolific of purple clusters.

Now, Texas possesses in her cotton fields a source of wealth which may be paralleled with the gold placers of California, with this difference: that by an improved agriculture her lands may be made richer and of increasing capacity, while the attraction of gold is a depleting process, which renders this great staple of California a product which may be said to have culminated to its largest crop without greatly improved modes of extraction, and its division is already among a far greater number of seekers. Thus, while Texas possesses an advantage prospectively in her present leading staple, we think that in those branches of industry now being entered into, California may contemplate the future with no misgivings. In the matter of wool, we have an equal extent of grazing lands, with a clearer and more temperate atmosphere, which conduce greatly to the health of sheep. In the matter of wine-growing, while Texas will produce largely, yet she will be subject to unusual seasons of humidity and drought, which will subject the vintage to the danger of being destroyed by mildew and rot, or burnt up during those dry periods of aridity to which in all parts of her uplands she is liable. Neither of these difficulties can ever be feared in California, and the vintage of this state is destined in no long time to exceed in value either the cotton crop of Texas or the gold product of California. So far as regards the growing of cereals, we think that Texas is the best for corn, and California for wheat and barley, although either can be made the granary of nations.

When climate and advantages of locality are compared, we think the award should be given to the Pacific state. Texas being in close proximity to other Atlantic states and Europe, has to compete in the production of raw materials, and in their manufacture, with the capital and abundant labor power of old and densely settled communities, whereas California, being at the door of the Asiatic and Australian worlds, may defy competition, as the difference of time and transportation gives her an ample margin as a future manufacturer of the merchandise and labor saving implements which the introduction of civilization into those populous hives of semi-barbarians, renders necessary for their enlightened, successful progress.

As regards climate, when we state that Texas is subject to periodical seasons of humidity and drought, we may suggest that these extreme and sudden changes under a tropical sun can but create seasons of wide-spread fatal malaria, from which California is happily exempt. F.

WRITE FOR YOUR PAPER.—It habituates you to writing, leads you to think, and enables you to express your thoughts. The man who thinks, and can express his thoughts, will acquire an influence in the community, which will go far towards enhancing his worth and usefulness. Simplicity is the best ornament; and if you make a mistake or two in the spelling, owing to being more used to the plow than the pen, any editor will take pleasure in putting you right before the public. Every editor knows that his best articles are the short ones from practical farmers.

MANAGEMENT OF THE APIARY FOR AUGUST.

SWARMING is mostly over previous to this month; there are places, however, where occasionally swarms separate; these are mostly grand, or great-grand swarms. In districts where pasturage abounds, this is one of the best honey-producing months in the year. Hives that have their main apartments full, should have empty boxes, for the reception of surplus honey, added, and as fast as they become full, and the combs sealed over, removed, and replaced with empty ones.

All hives that are not strong should be made so without delay; in fact, all equalization should be completed by the last of this month. Such colonies as have not got the main apartment of their hives full, require frequent attention while they are filling them, in order to keep their combs straight; (this will apply mainly to those in moveable frames) to do this, proceed as follows: After opening the hive, examine the combs; if they are found to be built in a curved manner, then, with a knife, partially cut the fastening near the ends, so that they can be pressed into the center of the frame; these, together with such as have elongated cells, forming uneven surfaces, should be changed to the opposide of the hive. Place the most uneven one next to the wall, and the next worst adjoining it; all are to be moved in like manner, but having one with a straight surface next to the space to be filled, empty frames added, to make the complement. The bees now proceed to fill these frames, and at this season of the year are apt to project their combs in like manner as above, but in the opposite direction. As far as this is found to be the case, all the combs are to be removed in like manner as above. Some bee-keepers alternate empty frames with full ones; this plan is not a safe one unless there is a numerous swarm. I would then only recommend one empty frame as an alternate.

Whenever a hive becomes full, or the bees cease to store honey, the opening of hives should be avoided as much as possible, except to supply or remove honey boxes.

Colonies can be formed in this month, to do well where there are few bees in the neighborhood, yet it will, in most cases, prove a loss in the end. It is much better economy to permit them to make honey for market. They are then in superior condition to endure the winter, and in the spring one such hive is usually worth as much as three weak ones. The attention required is also much less for the former than for the latter.

If possible, the *Apiary* should be so managed that before the first of August, all the hives should have their main apartments filled with combs, for most of the combs built during the earlier portion of the season are constructed for brood, and hence will be straight and regular; and also, combs that have been used for rearing brood, promote the health of the bees during the winter. Another advantage gained by this plan of managing is, that most of the early constructed comb will be filled with honey during this and the previous months. This summer-made honey is usually of a much better quality than that made during the fall season, consequently it is a more wholesome food for the bees.

All hives managed as above, usually have the spaces amongst the combs, as well

as the intervening space next to the bottom-board, literally full and crowded with bees. Such hives, if free from any taint of disease, are the standard of excellence; while colonies formed late in the season, or as yet have not filled their hives, build their combs (if at all) in a crooked, irregular manner, and fill them with dark colored fall honey, which is unwholesome, it being one of the causes of *dysentery* amongst bees during the winter and spring. And again: such irregular combs cannot be used for breeding purposes, to any advantage; consequently such hives, even if they do contain a numerous swarm, are inferior for all purposes, and hence are an uncertain investment.

SACRAMENTO, July 20th, 1860. J. S. HARBISON.

SCHEDULE OF PREMIUMS OFFERED BY THE CALIFORNIA STATE AGRICULTURAL SOCIETY,

At its Seventh Annual Fair, to be held at Sacramento, Sept. 19 to 26, 1860, together with the Rules and Regulations for the same.

N. B.—The Silver Plate offered is manufactured to order from the standard fineness of United States coin, each piece having the insignia of the Society and the arms of the State.

☞ The books are all uniformly bound, full gilt, in the best style of the art, bearing the seal of the Society on the back, and a gilt shield containing the award upon the side, making the richest possible combination of the beautiful and useful.

ABREVIATIONS.—G. m., gold medal; s. m., silver medal; l. m., large medal; m. m., medium medal; s. m., small medal; s. c., silver cup; s. b. k., silver butter knife; pl., plate; f. d., framed diploma.

Class I—Cattle.

No. 1.—DURHAMS.

	1st.	2d.
Bulls, three years old and upward..	$75	$50
Bulls, two years old.....	40	20
Bulls, one year old.....	30	15
Bull calf.....	15	10
Cows, three years old and upwards..	50	25
Cows, two years old.....	30	15
Heifer, one year old.....	20	10
Calf.....	10	5

No. 2.—DEVONS.

Same premiums as No. 1.

No. 3.—HEREFORDS.

Same premiums as No. 1.

No. 4.—AYRSHIRES.

Same premiums as No. 1.

No. 5.—ALDERNEYS.

Same premiums as No. 1.

Exhibiters of animals in Nos. 1, 2, 3, 4, and 5, must furnish satisfactory evidence of age and pedigree. The Judges will exclude *over fat* animals, should such be exhibited, the object of the Society being to encourage animals suited to breeding purposes.

No. 6.—GRADED CATTLE (Cross Breeds).

	1st.	2d.
Bull, three years old and upwards....	40	20
Bull, two years old.....	30	15

	1st.	2d.
Bull, one year old	10	5
Bull calf	8	4
Cow, three years old and upwards	30	15
Cow, two years old	20	10
Heifer, one year old	10	5
Calf	5	3
Milch Cow	40	20

The cow, during the experiment, and the fifteen days next preceding the same, to be kept on grass only. Time of experiment, from 1st to 10th of August, and from 1st to 10th of September.

Statement to be made in writing, containing:

1. The age and breed of the cow, and time of dropping her last calf.

2. The quantity of milk in weight, and *also* of butter, during each period of ten days.

3. The butter made to be exhibited with the cow, at the Fair, and the statement to be verified by the affidavit of the competitor, and one other person conversant with the facts.

No. 7.—Working Oxen.

	1st.	2d.
Pair, four years old and upwards	30	15
Pair, three years old	20	10
Steers, two years old	15	10
Steers, one year old	10	5
Pair, one two, or three years old, trained by boy under sixteen years old	25	15

No. 8.—Sweepstakes.

Bull	40	20
Cow	30	15
Dairy establishment and stock	50	25

Class II—Horses.

No. 9.—Horses of all Work.

The "Horse of all Work" should be between fifteen and sixteen hands; quick, lively ears; broad between the eyes; round barrel; short loins; well up in the shoulder; deep chested; square quarters; flat legs, short between knee and pastern, and hock and pastern; hind legs well under him; speed equal to eight miles an hour on the road, and at least three miles at the plow; with sufficient blood to insure spirit and endurance; and *no horse in this or any other class* shall be allowed to compete for a premium *unless he be sound.*

	1st.	2d.
Stallion, four years old and upward	50	25
Stallion, three years old	40	20
Best stallion, two years old	30	
Second best stallion, two years old.. Youatt on the Horse.		
Best stallion, one year old	20	
Second best stallion, one year old.. Dadd's Horse Doctor.		
Brood mare, four years old and upward, with colt	50	25
Brood mare, three years old, and colt	40	20
Brood mare, two years old..$20 and Youatt on the Horse.		
Brood mare, one year old..$20 and Dadd's Horse Doctor.		

No. 10.—Draft Horses.

Same premiums as No. 9.

No. 11.—Graded.

Same premiums as No. 9.

No. 12.—Roadsters.

Same premiums as No. 9.

No. 13.—Thoroughbred.

	1st.	2d.
Stallion, four years old and upward	100	50
Stallion, three years old	75	40
Stallion, two years old	50	25
Best stallion, one year old	30	
Second best stallion, one year old... Anatomy and Physiology of the Horse.		
Best colt, under one year	20	
Second best colt, under one year... Dadd's Horse Doctor.		
Mare, four years old and upward, and colt	75	40
Mare, three years old	50	25
Best mare, two years old	30	
Second best mare, two years old... Anatomy and Physiology of the Horse.		
Best mare, one year old	20	
Second best mare, one year old... Youatt on the Horse.		
Best mare colt, under one year	10	
Second best mare colt, under one year, Dadd's Horse Doctor.		

☞ In the department of "Thoroughbred" animals, whether cattle or horses, none will be permitted to compete but such as furnish a complete pedigree, tracing the entire line of descent to the English parent, on the side of both sire and dam.

Authorities for Cattle—English and American Herdbooks.

Authorities for Horses—English Stud Book, and American Turf Register.

No. 14.—Mare and Family of Colts.

Lot, consisting of a brood mare, and not less than three of her colts...	100	50

No. 15.—Matched Carriage Horses (over sixteen hands high)—Trotters.

Best..Forester's Horse of America, in 2 vols.
Second best...Anatomy and Physiology of the Horse, with colored plates.
Pacers—Same premiums as Trotters.

No. 16.—Matched Carriage Horses (under sixteen hands high.)

Same premiums as No. 15.

No. 17.—Sweepstakes.

Best stallion.....	$50	and f. d.
Second best stallion.....Forerster's Horse of America, 2 vols.		
Best mare.....	$25	and f. d.
Second best mare....Anatomy and Physiology of the Horse, with colored plates.		
Mare and colt.....	50	25

No. 18.—Jacks and Mules.

Best imported jack.....	50	
Second best imported jack..f. d. and Anatomy and Physiology of the Horse.		
Best California-bred jack.....	40	
Second best California-bred jack... f. d. and Dadd's Horse Doctor.		
Best California-bred jennet.....	20	
Second best California-bred jennet.. Allen's Diseases of Domestic Animals.		

Mules.

	1st.	2d.
Best pair, imported.....	25	
Second best pair, imported..American Farmer's Encyclopœdia.		
California-bred—Same premiums as imported.		
Best single mule, California-bred....	20	
Second best single mule....Stevens' Book of the Farm.		
Best, two years old.....		f. d.
Second best, two years old..Dadd's Horse Doctor.		
One year old..Same as two years old.		
Best colt.....American Farmer.		
Second best colt.....Dadd's Horse Doctor.		

Special Premiums.

Fred. Werner, of Solano, offers for colt, under one year, from his horse "Rattler,".....	100	50
For colt, under one year old, from his horse "Hamlet,".....	75	40

The exhibiter who, in the first and second classes, shall receive the greatest number of first premiums, shall receive an honorary gratuity of the American Short-Horn Herd Book, 3 vols.

Class III—Sheep.

No. 19.—Saxons.

Buck, two years old and upwards...	20	f. d.
Best buck, one year old and upward,	15	
Second best buck, one year old and upward....Randall's Sheep Husbandry.		
Best ewe and lamb.....	15	
Second best ewe and lamb..Randall's Sheep Husbandry.		
Best three lambs.....	50	
Second best three lambs..Shepherd's Own Book.		
Best sample wool, not less than five pounds.....	5	
Second best..Canfield's Sheep Book.		

No. 20.—Spanish Merinos.

Same premiums as No. 19.

No. 21.—Silesian Merinos.

Same premiums as No. 19.

No. 22.—French Merinos.

Same premiums as No. 19.

No. 23.—Southdowns.

Same premiums as No. 19.

No. 24.—Leicestershire.

Same premiums as No. 19.

No. 25.—Shropshire.

Same premiums as No. 19.

No. 26.—Chinese.

Same premiums as No. 19.

SHEPHERD DOG.

	1st.	2d.
Best.....Richardson on the Dog.		

No. 26½.—RABBITS.

Best pair common white (domesticated)	10	5
Best pair common white, lop-eared, (domesticated)	10	5
Best pair common white hare, long-eared, (domesticated)	10	5

Class IV—Swine.

No. 27.—LARGE (weighing over three hundred and fifty pounds when mature and fattened.)

	25	f. d.
Best boar, two years old and upward,		
Best boar, one year old and upward,	15	
Second best boar..Youatt & Martin on the Hog.		
Best boar, six months old and not one year	10	
Second best boar, six months old and not one year....Youatt & Martin on the Hog.		
Best sow, two years old and upward,	15	
Second best sow, two years old and upward....Youatt & Martin on the Hog.		
Best sow, one year old	10	
Second best sow, one year old. Youatt & Martin on the Hog.		
Best sow, six months old and not one year	5	
Second best sow, six months old and not one year....Youatt & Martin on the Hog.		
Best lot (not less than six) pigs under six months	10	
Second best lot (not less than six) pigs under six months....Youatt & Martin on the Hog.		

No. 28.—SMALL (weighing less than three hundred and fifty pounds when matured and fattened.)

Same premiums as No. 27.

Class V—Poultry.

No. 29.—DUNGHILL FOWLS.

Best lot white Dorkings..Dixon's Ornamental and Domestic Poultry.
Best lot gray Dorkings..Dixon's Ornamental and Domestic Poultry.
Best lot black Spanish..Dixon's Ornamental and Domestic Poultry.
Best lot white Polands..Dixon's Ornamental and Domestic Poultry.
Best lot black..Dixon's Ornamental and Domestic Poultry.
Best lot Golden..Dixon's Ornamental and Domestic Poultry.
Best lot Sumatra..Dixon's Ornamental and Domestic Poultry.
Best lot Shanghæ..Dixon's Ornamental and Domestic Poultry.
Best lot Bantams..Dixon's Ornamental and Domestic Poultry.
Best lot Bolton gray..Dixon's Ornamental and Domestic Poultry.
Best lot Brahma pootra..Dixon's Ornamental and Domestic Poultry.
Best lot Cochin China..Dixon's Ornamental and Domestic Poultry.

No. 30.—TURKEYS.

Best lot.....American Poultry Yard.

No. 31.—DUCKS.

Best lot Muscovy...American Poultry Yard.
Best lot Aylesbury..American Poultry Yard.
Best lot black Cayuga..American Poultry Yard.
Best lot Topknot....American Poultry Yard.
Best lot common....American Poultry Yard.

No. 32.—GEESE.

Best pair common.....Framed Diploma.
Best pair Bremen,.....Framed Diploma.
Best pair white China.....Framed Diploma.
Best pair brown China.....Framed Diploma.
Best pair African.....Framed Diploma.

No. 33.—SWANS.

	1st.	2d.
Best pair white (domesticated).....	$20	

No. 34.—GUINEA FOWLS.

Best lot.....Framed Diploma.

No. 35.—PEA FOWLS.

Best lot.....Framed Diploma.

No. 36.—PIGEONS.

Best and greatest variety.....	$10	5

No. 37.—COLLECTION OF POULTRY.

A premium of $25 will be awarded for the best collection of poultry, not less than thirty, (not to compete for any other premium) accom-

panied by a verified statement, which must be filed with the Secretary at the time of the entry, of the method of keeping; arrangement of the poultry-house and yards; the expense attending it; the number of eggs, their average weight, and how preserved; number of chickens raised, the market value of each, how prepared and packed for market, and where sold.
For the second best collection, as above.. $10

Class VI—Farms, Orchards, Vineyards, etc.

No. 38.—Grain Farms.

Best improved and furnished grain farm over 500 acres....Silver tea set, worth.....$200
Second best improved and furnished grain farm over 500 acres..Encyclopœdia Americana, 14 volumes.
Best improved and furnished grain farm, under 500 acres.....Silver pitcher..... 100
Second best improved and furnished grain farm, under 500 acres..f. d. and Loudon's Encyclopœdia of Agriculture.

No. 39.—Stock Farms.

Best improved, cultivated, and furnished stock farms of over 500 acres, and of under 500 acres....Same premiums as for grain farms of the same size.

No. 40.—General Farms.

Best, over 300 acres..Silver pitcher worth $100
Second best, over 300 acres..f. d. and Loudon's Encyclopœdia of Agriculture.
Best, under 300 and over 160 acres..Silver ice bowl, worth $50.
Second best, under 300 and over 160 acres..f. d. and Lindley's Vegetable Kingdom.
Best, under 160 acres....Silver butter-cooler, worth $40.
Second best, under 160 acres..Loudon's Encyclopœdia of Agriculture.

No. 41.—Flour Mill.

Best flour mill.....Silver ice-bowl worth $50
Second best.....Framed Diploma.

No. 42.—Orchards.

Best, over 50 acres..Silver pitcher worth $100
Second best, over 50 acres..American Sylva.
Best, over 20 and under 50 acres..Silver ice-bowl worth $50.
Second best, over 20 and under 50 acres..f. d. and Loudon's Self-Instruction.
Best, over one and under 20 acres..Pair silver cups worth $30.
Second best, over one and under 20 acres..f. d.
Best, under one acre.....Pair of silver cups worth $25.
Second best, under one acre..Framed Diploma.

Without Irrigation.

Five acres or over, not on bottom land, grown without irrigation..... $50 25

No. 43.—Vineyards.

Best vineyard, over 10,000 vines..Silver pitcher worth $100.
Second best vineyard, over 10,000 vines..Hovey's Fruits of America, 2 volumes, colored plates.
Best vineyard, under 10,000 vines..Pair silver goblets worth $50.
Second best vineyard, under 10,000 vines..Vineyards of France and Spain, by Busby.
Best vineyard, foreign vines, 1,000 or over..goblet worth $25.
Second best vineyard, foreign vines, 1,000 or over.....Framed Diploma.

No. 44.—Gardens and Nurseries.

Best vegetable garden..Pair goblets worth $25.
Second best vegetable garden..Lindley's Vegetable Kingdom.
Best flower garden..Same premiums as vegetable garden.
Best fruit nursery..Silver pitcher worth $100
Second best fruit nursery..Loudon's Aboretum et Fruticum Brittanicum.
Best ornamental nursery..Silver butter cooler worth $40.
Second best ornamental nursery...Landscape, Gardening, Parks and Pleasure Grounds, by C. H. J. Smith.
Best grape nursery..... 25 15
Best hedge fence..silver wine cup worth $25.
Second best hedge fence...Warder on Hedges and Evergreens.

No. 45.—Field Crops.

	1st.	2d.
Best wheat, over ten acres.....pl.	$25	
Second best...Stevens' Book of the Farm.		
Best barley, over ten acres.....pl.	25	
Second best..Stevens' Book of the Farm.		
Best oats, over ten acres.....pl.	25	
Second best...Stevens' Book of the Farm.		

Best corn, over ten acres.....pl. 25
Second best...Stevens' Book of the Farm.
Best rye, over five acres.....pl. 8
Second best.....American Farmer.
Best buckwheat, over five acres..pl. 8
Second best.....American Farmer.
Best potatoes, over one acre.....pl. 8
Second best.....American Farmer.
Best sweet potatoes, over one acre...pl. 10
Second best.....American Farmer.
Best onions, over one acre.....pl. 10
Second best.....American Farmer.
Best alfalfa, five acres or over....pl. 25
Second best..Farmers' Encyclopedia.
Best beans, one acre or over.....pl. 10
Second best.....American Farmer.
Best broom corn, five acres or over..pl. 10
Second best.....American Farmer.
Best tobacco, half an acre or over..pl. 20
Second best...Farmers' Encyclopedia.
Best hemp, one acre or over.....pl. 20
Second best...Farmers' Encyclopedia.
Best sugar cane, five acres or over...pl. 20
Second best...Farmers' Encyclopedia.
Best rice, one acre or over.....pl. 50
Second best..f. d. and Fortune's China.
Best cotton, one acre or over.....pl. 50
Second best...f. d. and Farmers' Encyclopedia.
Best hops, one acre or over.....pl. 50
Second best...f. d. and Farmers' Encyclopedia.
Best tea plant, one dozen specimens.pl. 25 f. d.

Class VII—Grains, Seeds and Vegetables.

No. 46.—Grains.

	1st.	2d.
Best wheat, one bushel or over.....	$ 5	
Best corn, one bushel or over.....	5	
Best barley, one bushel or over.....	5	
Best oats, one bushel or over.....	5	
Best rye, one bushel or over.....	5	
Best buckwheat, one bushel or over.	5	
Best twelve ears seed corn, white...	3	
Best twelve ears seed corn, yellow...	3	
Best twelve ears seed corn, sweet...	3	
Best millet, half bushel or over....	3	

No. 47.—Seeds.

Best sample Chinese sugar cane.... 3
Best sample white beans, one bushel or over..... 3
Best sample peas, one bushel or over 3
Best sample flaxseed, one bushel or over..... 10
Best sample hops, not less than twenty-five pounds..... 10
Best sample timothy seed, one bushel 5
Best sample white clover seed, half bushel..... 3
Best sample alfalfa seed, half bushel.. 3
Best sample native clover seed, half bushel..... 3
Best assortment of seeds by one grower.....s. c. 25 f. d.
Best assortment of grains and seeds in bottles, to be donated to the Society's cabinet..Loudon's Encyclopedia of Gardening.
Second best..Gardener's and Botanist's Dictionary.

No. 48.—Vegetables.

Best garden vegetables exhibit..... 15
Best pumpkins and squashes 5
Best onions..... 5
Best beets..... 5
Best carrots..... 5
Best parsnips..... 5
Best salsify..... 5
Best sweet corn, green, twenty-five ears..... 5
Best turnips..... 5
Best tomatoes..... 5
Best cabbage..... 5
Best egg plant..... 5
Best cauliflower..... 5
Best lettuce 5
Best rhubarb..... 5
Best celery..... 5
Best potatoes, exhibit..... 10
Best sweet potatoes, exhibit..... 10
Best pea nuts..... 10
Best exhibit of prepared grasses and grains in head....Suburban Horticulturist.
Second best...Flint's Grasses and Forage Plants.

No. 49.—General Farm Products.

Best and largest exhibit of the products of one farm, including grains, seeds, vegetables, fruits, flowers, grasses, butter, cheese, pork, hams, bacon, etc.....Encyclopedia Americana.
Second best.....Farmers' Encyclopedia.

Class VIII—Labor.

No. 50.—Plowing Match.

☞ The plowing match will take place at a time and place hereafter to be named, under

the direction of the Judges; provided *not less than five entries* are made with the Secretary, *on or before Saturday, September 1st.*

	1st.	2d.
Plowing with oxen	$25	$15
Plowing with horses	25	15
Plowing with mules	25	15
Boys under eighteen years of age, (with the same team) provided not less than three entries are made with the Secretary on or before Saturday, September 1st	s. c.	s. m.

The name of the plowman, the class of team, and kind of plow, must be given with the entry; and the following rules will govern the match:

1. Quantity of ground for each team, one-fourth of an acre.

2. Horse and mule teams will be allowed two hours, oxen two and a half, in which to do the work.

2. The teams to start after one time, and each plowman to do his work without a driver or other assistant.

4. No premium will be awarded where the work is not done in the schedule time.

5. Each plowman to strike his land, as assigned, and plow entirely independent of the adjoining land.

6. No person, except the judges and the plowman, will be permitted to be upon the ground plowed, or to be plowed, from the time of commencing the work till the judges leave the ground.

No. 51.—Spading Match.

Ground, ten feet wide by twenty long; work, ten inches deep; time, one hour.

Best work by a man	s. c.	s. m.
Best work by a boy under eighteen years old (time for boy, one hour and twenty minutes)	s. c.	s. m.

Class IX—Manufactures.

No. 52.—Implements and Machinery.

Exhibiters of implements and machinery will be required to label the implement or machine with the name of exhibiter; name of machine; its use; price at which sold.

In arranging implements and machinery for exhibition, those of the same class will be arranged together, as far as practicable, and exhibiters are desired to give as early notice as possible of the articles to be exhibited, to enable the Superintendent to carry out the above arrangement.

Implements and machinery in competition for premiums are expected to be of the construction and finish as prepared for market, and the Judges are instructed not to award premiums in the regular competition of the different classes where this requirement is not complied with.

	1st.	2d.
Best threshing machine	pl. $50	
Second best threshing machine	f. d.	
and American Architect.		
Best reaper	pl. 30	f. d.
Mower—same premiums as reaper	f. d.	
Best combined reaper and mower	pl. 40	
Second best combined reaper and mower	f. d.	
and American Farmers' Encyclopedia.		
Best plow	f. d.	
Second best plow	Renwick's Mechanics.	
Best gang plow	pl. 20	
Second best gang plow	American Farmer.	
Best grain sower	pl. 20	
Second best grain sower	Smith's Mechanics.	
Best cultivator	pl. 10	
Second best cultivator	Farm Implements, by J. J. Thomas.	
Harrow—same as cultivator.		
Horse rake	pl. 5	
Best fan mill	pl. 10	
Second best fan mill	Farm Implements, by J. J. Thomas.	
Best churn	pl. 10	
Second best churn	Howe's Mechanics.	
Cheese press—same as churn.		
Best hay press	pl. 20	
Second best hay press	Smith's Mechanics.	
Best wheelbarrow	pl. 5	
Second best wheelbarrow	Howe's Mechanics.	
Ox yoke—same as wheelbarrow.		
Best set of garden tools	pl. 15	
Second best set garden tools	Howe's Mechanics.	
Best team harness	pl. 20	
Second best team harness	Downing's Rural Essays.	
Best carriage harness	pl. 25	f. d.
Best gentleman's saddle	pl. 15	
Second best gentleman's saddle	Downing's Rural Essays.	
Lady's saddle—same as gentleman's.		
Best windmill	s. c. 25	f. d.
Best bee hive	f. d.	
Second best bee hive	Quinby's Bee-keeping.	

	1st.	2d.
Best basket and willow ware exhibit.	f. d.	
Second best basket and willow ware exhibit.	Warder on Hedges and Evergreens.	
Best force pump	pl. 25	f. d.
Best lifting pump	pl. 15	10
Best ditching machine for tule lands	s. c 50	25
Most numerous collection of agricultural and gardening tools and implements, manufactured in the State of California, by or under the supervision of the exhibiter, materials, workmanship, utility, durability and prices to be considered in both cases	pl. 50	25

In these last cases, a catalogue of the implements, (which must be those for agricultural and gardening purposes only) and the price of each must be given, and certificate as to the manufacture, to be delivered at the time of entry.

P. S. Persons presenting agricultural implements or articles of mechanical ingenuity and utility, are requested to furnish the Secretary with a particular description of the articles, the price, and place where they can be had—as it is intended to publish a descriptive list of the articles exhibited at the show, for the benefit of manufacturers and purchasers.

No. 53.—Carriages and Wagons.

	1st.	2d.
Hack or family carriage	pl. $50	f. d.
Rockaway (standing top)	pl. 40	f. d.
Best Concord buggy (top)	pl. 15	
Second best	Smith's Mechanics.	
Best New York or Philadelphia style top buggy	pl. 25	
Second best	Smith's Mechanics.	
Best road sulky	pl. 10	
Second best road sulky	Renwick's Mechanics.	
Track sulky—same as road sulky.		
Freight wagon, to carry six thousand pounds or over	pl. 40	f. d.
Thoroughbrace top wagon	pl. 30	f. d.
Best dray	pl. 10	
Second best dray	Renwick's Mechanics.	
Best and largest exhibit in this department, number of samples, style and finish considered	pl. 100	
Second best	Life membership.	

No. 54.—Domestic Manufactures.

	1st.	2d.
Refined sugar, twenty-five pounds, California production	f. d.	
Unrefined sugar, twenty-five pounds, California production	f. d.	
Syrup, one gallon, California production	pl. 10	5
Honey exhibit	pl. 10	5
Lard, twenty-five pounds	pl. 10	5
Soap, fifty pounds	pl. 10	5
Candles, twenty-five pounds	pl. 10	5
Glue, ten pounds	f. d.	
Essential oils, production of 1860	f. d.	
Cigars	f. d.	
Vermicelli and maccaroni	f. d.	pl. 5
Confectionery	f. d.	pl. 5
Starch	f. d.	pl. 5
Paper	f. d.	pl. 5
Silk cocoons	s. c. 10	pl. 5
Sewing silk, one ounce	s. c. 10	pl. 5
Leather exhibit	s. c. 20	f. d.
Leather exhibit, fancy finished	s. c. 20	f. d.
Salt	s. c. 10	pl. 5
Beef, salted, six months, half-barrel	pl. 20	f. d.
Pork, salted, six months, half-barrel	pl. 20	f. d.
Hams, smoked, fifty pounds	pl. 10	5
Bacon, smoked, fifty pounds	pl. 10	5
Fish, pickled, half-barrel	pl. 10	5
Fish, in cans	pl. 10	5
Fish, smoked	pl. 10	5
Brick exhibit	pl. 10	5
Brick, fire	pl. 15	10
Granite, worked	pl. 25	10
Furniture exhibit	pl. 30	f. d.
Organ	pl. 40	20
Piano forte	pl. 40	20
Billiard table	pl. 20	10
Steam engine	pl. 50	25
Boiler work	pair cups 30	f. d.
Blacksmith work exhibit	pl. 10	5
Castimgs	pl. 10	5
Tin work	pl. 10	5
Tailor work	pl. 10	5
Silver ware	s. g. m	l. s. m
Brooms	pl. 10	5
Pottery	pl. 10	5
Stoves	pl. 15	5
Rope	pl. 10	5
Firearms	pl. 15	10
Boots and shoes	pl. 10	5
Hats and caps	pl. 10	5
Book binding	pl. 10	5
Millinery	pl. 10	5
Mantuamaking	pl. 10	5
Carving	pl. 10	5
Bird cages	pl. 10	5

No. 55.—Flour, Meal, etc.

One hundred pounds of flour	l. s. m.	s. s. m.	
One hundred pounds of cornmeal.	m. s. m.	s. s. m.	
One hundred pounds buckwheat flour	m. s. m.	s. s. m.	

Twenty-five pounds farina.....m. s. m. s. s. m.
Barrel crackers.....m. s. m. s. s. m.
Barrel soda biscuit.....m. s. m. s. s. m.
Barrel pilot bread.....m. s. m. s. s. m.
Best sample domestic wheat bread.....m. s. m. s. s. m.

No. 56.—Dairy.

Best exhibit of butter..... 15
Second best.....Stevens' Book of the Farm.
Exhibit of butter by a girl under eighteen years of age.....l. s. m. s. b. k.
Best exhibit of cheese..... 15
Second best.....Stevens' Book of the Farm.

A statement of the time and manner of making the butter and cheese must accompany each sample, and be deposited with the Secretary. Answers, in writing, to the following questions will be required, in order to obtain a premium:

FOR BUTTER.

1. At what time butter was made, and from what number of cows?
2. What is the treatment of cream and milk before churning, in winter and summer—and why?
3. What is the method of freeing the butter from milk?
4. Do you use water in freeing the butter, or not—and why?
5. What quantity of salt per pound, and the kind of salt used?
6. Do you use saltpeter or any other substance in making the butter—and why?
7. Has any kind of salt been found injurious in making butter; if so, state the kind and reasons?
8. What is the manner of packing and preserving the butter?

FOR CHEESE.

1. Do you warm all the milk at all seasons of the year or not—and why?
2. At what degree of heat do you set or add rennet—and why?
3. Do you vary the heat at setting at different seasons of the year—and why?
4. What kind of rennet do you use; how prepared; by what rule do you judge of the proper time to commence breaking the curd—and why?
5. How do you break and make the curd fine—and why?
6. Do you observe a rule as to the time occupied in breaking the curd—and what is it?
7. Do you observe a rule as to the age of the curd when you begin to heat up to scald, and the time occupied in raising the heat—and why?
8. How do you apply heat in scalding; what degree is used, and how long kept applied to the curd to cook it enough?
9. Do you vary your rule in scalding at different seasons of the year—and why?
10. How do you determine when curd is scalded enough?
11. How do you separate the whey and curd, and what rule have you for tempering the curd for receiving the salt?
12. What kind of salt used; how much, and how do you apply it, and at what particular state of the curd?
13. How soon after applying the salt do you put the curd to press, warm or cold—and why?
14. What power do you press with, and how long?
15. What is the cause of the pressing cloth adhering to the cheese, and what is your remedy?
16. How do you give coloring to the cheese, inside or outside?
17. How do you produce a rind impervious to the flies?
18. What kind of oil or dressing is used upon your cheese, and how is it applied?
19. What is the cause of cheese swelling, and what is a remedy?
20. Do you use the thermometer to test the degree of heat?

☞ The dairy products must be manufactured by the person producing them for exhibition.

Class X—Mines and Mining.

No. 57.—Mines.

☞ All articles under the head of "Mining Implements," must be accompanied by a full description of the same; and all specimens under the head of "Minerals," or "Mineral Products," must be accompanied by a statement showing where and when procured, together with such other information as will tend to aid the Judges in making judicious awards.

	1st.	2d.
Quartz mill.....	$50	$25
Best improved and most skillful worked quartz claim. silver butter cooler	40	
Second best.....s. c.	20	

Tunnel—same as quartz claims.
Shaft—same as quartz claims.
Hydraulics—same as quartz claims.
River claim—same as quartz claims.

Fluming—same as quartz claims.
Salt works.....pair silver goblets 50 25

No. 58.—Mining Implements.

Derrick	15	10
Best amalgamator, a model.pair cups	30	
Second best.....cup	15	
Quartz crusher	40	20
Tunneling machine	40	20
Riffle box	10	5
Sluice	10	5
Sluice rake.....l. s. m.	m. s. m.	
Sluice fork.....l. s. m.	m. s. m.	
Sluice hoe.....l. s. m.	m. s. m.	
Mining pick.....l. s. m.	m. s. m.	
Drilling machine.....l. s. m.	m. s. m.	
Blasting apparatus.....l. s. m.	m. s. m.	
Hydraulic apparatus.....l. s. m.	m. s. m.	

No. 59.—Mining Products.

Gold quartz	25	15
Gold bullion	25	15
Coarse gold	25	15
Fine gold	25	15
Silver ore	20	10
Cinnabar	10	5
Quicksilver	10	5
Copper and copper ore	10	5
Iron and iron ore	10	.5
Coal	10	5
Asphaltum	10	5
Marble	10	5
Lead	10	5
Sulphur	10	5
Granite	10	5
Borax	6	3
Precious stones	20	15
Mineral waters	10	5
Petrifactions	10	5
Gypsum	10	5

Class XI—Works of Art.

No. 60.—Paintings.

Best portrait, life size, in oil....pair goblets	30	
Second best.....goblet	15	
Best landscape, in oil....pair goblets	30	
Second best.....goblet	15	
Best portrait, medium size.....pl.	20	10
Best painting, water colors.....pl.	15	10

No. 61.—Drawing.

Best drawing, India ink.....pl.	15	10
Best drawing, monochromatic....pl.	15	10
Best drawing, pencil or crayon...pl.	15	10

No. 62.—Engraving.

Best engraving on wood.....pl.	20	10
Best engraving on copper.....pl.	30	15
Best lithograph.....pl	20	10

No. 63.—Heliography.

Best photograph, life size, plain..pl.	20	10
Best photograph retouched with India ink, or colored.....pl.	25	15
Best photograph, plain, small size.pl.	10	5
Best daguerreotypes.....pl.	10	5
Best ambrotypes.....pl.	10	5

No. 64.—Sculpture.

Best marble monument.....pl.	40	20
Best marble mantle.....pl.	40	20
Best plaster bust, life size.....pl.	40	20
Best statuette.....pl.	25	15
Best medallion.....pl.	25	15
Best center piece.....pl.	20	10
Best cornice.....pl.	20	10
Best tombstone.....pl.	20	10
Best exhibit in this department..pl.	100	50

No. 65.—Miscellaneous Works of Art.

Printing, book work.....pl.	10	5
Printing, newspaper.....pl.	10	5
Printing, cards, etc.....pl.	10	5
Penmanship.....pl.	10	5
Wax fruit.....pl.	10	5
Wax flowers.....pl.	10	5
Leather work.....pl.	10	5
Shell work.....pl.	10	5
Hair work.....pl.	10	5
Bead work.....pl.	8	4
Papier mache work.....pl.	10	5

No. 66.—Home Work.

Best exhibit of needle-work, (by an amateur) to consist of at least one shirt, one quilt, one dress, and one specimen in crochet work..Work-stand worth.....	25	
Second best.....Reticule worth		10
Embroidery in cotton.....pl.	10	5
Embroidery in silk.....pl.	10	5
Embroidery in worsted.....pl.	10	5
Knitting.....pl.	5	3
Dried fruits, exhibit.....pl.	10	5
Dried fruits, specimens.....pl.	5	3
Can fruits, exhibit.....pl.	15	10
Preserved fruits, exhibit.....pl.	10	5
Jellies.....pl.	8	4
Pickles.....pl.	5	3
Catsup.....pl.	5	3
Raisins, exhibit, 25 pounds.....pl.	50	25
Raisins, specimens.....pl.	10	5

Class XII—Fruits, Flowers, Plants, etc.

No. 67.—Apples.

	1st.	2d.
Greatest number of good varieties and best specimens, correctly named, at least three specimens of each, a s. c. value	20	10
For twenty varieties, grown, and correctly named, three specimens of each....pl.	10	5
For twelve varieties, correctly named, six specimens of each	5	3

In arranging the fruits on the tables, the autumn and winter varieties must be in separate groups, for the convenience both of judges and visitors.

No. 68.—Pears.

Greatest number of good varieties and specimens, correctly named, three specimens of each variety....s. c.	20	10
For twenty varieties and specimens, correctly named, three specimens of each....pl.	15	7
For twelve varieties and specimens, six of each, correctly named...pl.	8	5
For six varieties and specimens, correctly named, six specimens of each....pl.	5	3

In arranging the pears on the table, exhibiters will be required to place the American varieties in separate groups, for the convenience of both judges and visitors.

No. 69.—Peaches.

For the greatest number of varieties and grown specimens, at least three of each, correctly named....pl.	10	5
For six varieties, six specimens of each, correctly named	5	3
Best, one variety, twelve specimens..	2	

No. 70.—Plums.

Greatest number of varieties and grown specimens, six of each, correctly named....pl.	10	5
Six varieties, six specimens of each.	5	2
One variety, twelve specimens	3	2

No. 71.—Nectarines.

Greatest number of varieties and specimens, correctly named, four of each	3	2
One variety of nectarines, twelve specimens	2	

No. 72.—Quinces.

Dozen apple or orange	3	2

No. 73.—Grapes.

For the greatest number of good native varieties and grown specimens, three bunches of each....pl.	10	5
For the best one variety, six bunches,	5	
For the greatest number of varieties and specimens of foreign grapes, grown under glass, six bunches of each....pl.	10	6
Greatest number of varieties and specimens of foreign grapes of open culture	20	10
One variety, three bunches	3	2

No. 74.—Watermelons.

For the greatest number of varieties and specimens....pl.	5	2
Specimen of any variety	2	1

No. 75.—Muskmelons.

For the greatest number of varieties and specimens....pl.	5	2
Specimen of any variety	2	1

No. 76.—Cranberries.

Peck of domestic cultivated (to be accompanied with a full description of the manner of cultivation, nature of soil, etc.)....pl.	5	2
Best and largest exhibit of fruits...	30	15

Any premiums may be withheld, in the discretion of the committee, if the samples exhibited are not worthy of a premium.

No. 77.—Flowers.

Flowers, exhibit of rare plants, in pots	25	15
Floral design, ornamental to the Hall,	20	10
Cut flowers, exhibit	10	5
Roses, exhibit	8	4
Bouquets, exhibit	10	5
Herbanum, named and classed, native flowers, donated to the Society, cream pitcher	50	25

Class XIII—Native Wines.

No. 78.—White Wines.

White still wine, four years old and upward....pl.	15	10

White still wine, three years old and upward.....pl. 15 10
White still wine, two years old and upward.....pl. 15 10
White still wine, one year old and upward.....pl. 15 10

No. 79.—White Sparkling.

Same premiums as No. 78.

No. 80.—Red Wines.

Same premiums as No. 78.
Exhibit of wines, including number of varieties, vintages, and quality, s. c..... 30 f. d.

Class XIV—Miscellaneous.

No. 81.—Fibers.

Bale of flax, twenty-five pounds.... 25 15
Bale of cotton, twenty-five pounds.. 25 15
Bale of Manilla hemp, twenty-five lbs. 25 15
Bale of Sisal hemp, twenty-five lbs. 25 15

No. 82.—Roots, etc.

Half acre of Chufas..... 25 15
Half acre of artichokes..... 25 15
Bag of coffee, twenty pounds..... 25 15
Bag of rice, twenty pounds..... 25 15
Castor beans, thirty-five pounds.... 25 15
Family sewing machine..... f. d.
Sewing machine work..... f. d.

No. 83.—Essays.

Best essay on the culture of the vine..Encyclopœdia Americana.
Second best.....Loudon's Self-Instruction.
Essay on manufacture of wine; reclamation and culture of tule lands; reclamation and culture of alkaline soils; peach leaf curl, and remedy...Each the same premiums as on culture of the vine.
On destruction of squirrels and gophers; on irrigation; and on statistics of California products...best of each...Downing's Complete Works.
Second best.....Loudon's Encyclopœdia of Architecture.

No. 84.—Reports.

Best newspaper report of the Fair..Encyclopœdia Americana.
Second best.....Downing's Complete Works.

Articles or animals not enumerated in the above schedule, will be awarded special premiums, in the discretion of the Board of Managers.

The society will add its honorary diploma to such citizens' purses or premiums as may be offered for tournaments and displays of the military, gymnasts, firemen, horses, and horsemen.

☞ The citizens of Washington and Utah Territories, as well as the State of Oregon, are cordially invited to participate in the exercises of the Fair, on the same conditions as the citizens of this State.

RAILROAD WANTED.

THERE is a necessity for a Railroad from Oakland to San José, in order to facilitate the immense farming interest which has grown up on the east side of the bay between those two places. We know of no country where the track could be graded at so low a cost, and which would command so large a local business throughout its entire length. Let us enumerate the points where there would be stations required. The starting point would be from a pier to be built outside of the flats, to deep water within four miles of San Francisco; thence four miles from this to Oakland, two to San Antonio, five to San Leandro, four to San Lorenzo, six to the Alameda river—half way between Vallejo's mill and Alvarado—three to Centreville, five to the Warm Springs, five to ———, and six to San José, making nine stations with about forty miles of railway travel and four of ferriage. The whole distance, from San Francisco to San José, could be made in two hours, including stops.

The benefit of such a road to San Francisco can hardly be estimated, as it would enable her business men to have their residences along its entire route, and then vegetables and perishable fruits, as well as milk, eggs and the multitude of necessary things for daily consumption, could be brought the whole distance, as well as from nearer points, which would tend to equalize market prices.

If parties other than men of straw would take hold of the matter, we have no doubt but a large portion of the stock for this road could be secured along the line and in Santa Clara county. There are times in the year when the farmers, through whose lands it would pass, could as well as not, grade the road and take their pay in the stock. We can hardly take up a newspaper, or mingle with a group of persons at any street corner, but we are told of the go-ahead character of the people of California. Now when we look round for the evidence of our goaheadativeness, we confess we don't readily see it. If our farming industry is examined, we find only here and there a farm which can claim that the land has been enriched by cultivation; neither are we keeping up with our Australian kinsmen, in the matter of railway building. Time is money, and we should long since have put a stop to the dilatory mode of traveling yet in vogue over many of our great routes. F.

AN EXTENSIVE FARM.

ACCEPTING the polite invitation of Gen. Hutchinson to pay a visit to the great grain farm of Hutchinson & Green, on Dutch Creek, Yolo county, we jumped into a buggy with the General, leaving the St. George hotel towards evening, and had a most delightful ride over one of those splendid natural roads, found everywhere in the great valleys of California, and which excel the expensive artificial roads of all other countries.

The General is quite as much at home while holding the ribbons behind a fast nag, as in acting the host at the St. George, and the distance out to the ranch, of fifteen miles, was made in a trifle over an hour. But here we were surrounded by an ocean of grain. There are some five thousand acres inclosed, one thousand of which was in wheat, one thousand in barley, and nine hundred had been cut for hay, the balance being used for pasturage. Eighteen hundred tons of hay had been mowed, most of which already was stacked. The wheat was very fine, and would probably average thirty bushels to the acre, while the barley would go up to forty, making a total of wheat and barley, from this farm, of upwards of sixty thousand bushels. About fifty teams and seventy men were employed at this time in the various operations of the farm. There is a small young orchard and vineyard near the building on the bank of the creek, which looked very healthy, and there was no sign of the curl on the peach leaves, which certainly indicates that this is a favorable locality for orchards and vineyards. A fine band of horses and cattle were grazing in a distant pasture, but the feature of the stock is a herd of one hundred milch cows, these being of common American breeds well crossed with the Durham. The dairy pro-

duce is an important item in the receipts of this farm, and we could wished to have seen large fields of mangel wortzel, and other root crops, growing for this fine herd of milchers, as the natural food was fast drying up, and there must be a great falling off directly in the quantity as well as quality of the dairy product in consequence. We were gratified to notice that the accomplished lady of Mr. Green did not think it beneath her to superintend in person the operations of the dairy rooms; and no doubt it is owing, in part, to this fact, that this dairy stands so high among the consumers of good butter in the Sacramento market.

Mr. Green has reduced the operations on this farm to a system, and every department seems to be arranged with an eye to economy.

Now here were five thousand acres of fertile land, every acre of which could be worked by a steam plow, and by this mode of cultivation can large farm operations be conducted profitably in California under one proprietorship. It being four miles from the house to the north side of the ranch, it would be a grand spectacle to see one or two steam plows, say of Waters' make, cutting twenty feet wide each, starting on trips out and back, doing the work of forty teams with a single span of horses to a plow. The cost of forty teams, harnesses and plows, would be sixteen thousand dollars, while the cost of two steam plows should not be more than six. The daily expense of forty men and feeding forty teams, would be not less than eighty dollars, while the cost of running the two steam plows would not be more than twenty-five dollars, making a saving of fifty-five dollars, besides interest on the ten thousand dollars saved between the cost of animal and steam power, while the matter of loss in time on account of rainy days, again foots up a large item in favor of the Waters machine, as it neither eats fodder nor claims wages when it can't work on account of the weather. Large farms are worked to a disadvantage by manual labor, as there is much loss of time in reaching distant fields.

For the purpose of illustration, we will suppose thirty of Hutchinson & Green's men were at work on a part of the farm three miles from the dwelling. They could not reach this point short of an hour, making a loss of thirty hours morning and evening in going and returning. Sixty hours is equal to five days work of twelve hours each. Now if one should say to Mr. Green that he had five men idle all day long out of a gang of thirty, he would at once say it was bad economy; yet it amounts to this. We opine that a multitude of reasons could be given, to show that farming on an extensive scale, where labor is high, is not profitable, and if we had our choice to take the grain or stock department of this farm, we would say at once, give us the herd of one hundred milchers, with four or five hundred acres for pasture and to raise grain crops, and we will distance the seas of wheat and barley as a money making operation, on a test of a series of years.

What say you, General; will you be the first to introduce the steam plow to successful use in Callifornia? F.

THE DAIRY WE ADMIRE.

THERE are many things required to make up a good and profitable dairy. The first thing wanted is a good grazing farm, where there is an abundant supply of pure water, and having sufficient land, suitable for tillage, to raise root crops to feed through the fall and winter. Then there should be sheds built around the sides of the yard, which should be marked off into stalls, so that each cow on being driven up from the pasture would go to her accustomed place, and should be kept in her stall until milked and ready to be sent to pasture again. The stalls should be made with two upright bars, one fast and the other moveable, so that the operation of fastening or unfastening of the cows can be expeditious. In front of the cows there should be a feed trough, for roots, cut feed or hay. In these troughs there should always be a supply of clean salt, so that the cow may busy herself by lapping it while being milked. Cows always give down their milk more cheerfully when there is something before them to taste, which can be the salt or a trifle of fodder.

Where cows are left loose to run about the yard during milking time, they stir up the droppings which have been ground to dust, and if the wind is blowing, an amount of filth will necessarily get into the vessels, which will taint the butter made from the cream of such a milking. Then besides avoiding this difficulty, which is repugnant to every sensitive taste—by having stalls for the cows, there is no trouble in telling what cows have been milked and what ones have not, which it is difficult to do in a large herd where they are constantly shifting their places in the yard. Another advantage, too, of sheds on the sides of the yard is, that where Chinese sugar cane or corn is sowed broadcast and cut green for soiling, the wagon can drive round on the outside and distribute the fodder in the troughs as wanted. Again, the sheds give protection against the inclemency of the winter storms, which have a marked effect in diminishing the quantity of milk where the cow is exposed to the weather.

After a milker has filled two buckets with milk, he should take it to the dairy room, where it should be immediately strained and placed on the shelves where the cream is to rise. The practice of allowing the milk to remain in the pails till all the cows have been milked, is detrimental to the cream, as it commences rising at once, and absorbs the dust and any bad odor that may be about the yard. It is important that the same hand should always milk the same cows, and this can be done without any mistakes where they are put in stalls.

The dairy room should be of brick, stone or adobes; well plastered on the inside, with a plenty of ventilation, and so constructed that it can be kept at a certain temperature. A stream of pure water passing through the room gives off sufficient hydrogen to keep the atmosphere moist and sweet. This stream of water can be had by artificial means if not otherwise, it merely repuiring a wind mill and tank—and the wind mill can be used for churning. Common tin milk pans are best—all things considered, and should be so arranged on the shelves that wire screening or netting can be stretched over them to keep the flies out. The dairy room should be kept scrupulously clean, and let it not be forgotten that the main reason why butter

does not keep for a length of time and retains its sweetness, is owing to the fact that some of the utensils necessary in its manufacture are used when sour or musty. The milk pails, pans, cream jars, churns, butter worker, and packages for the reception of the butter after it is ready to pack down, should be washed in scalding water and rinsed in a boiling cauldron, so as to free them of the least smell of sour milk or soap.

It matters little what kind of a churn is used so that it brings the butter expeditiously. A point now is reached requiring care and judgment, as the working out the buttermilk and salting the butter are nice operations. The hand should never be allowed to touch the butter, and the salt used should be pure and fine. There are a myriad of minute interstices in the butter from which it is impossible to expel all of the buttermilk, therefore a principal object of adding salt is to fill up these interstices, or in other words, salt the buttermilk so that it will keep while imprisoned in the cells of the butter. We believe that the dairyman should finish working over the butter soon after it is churned and before it has hardened by cooling, as it then is more pliable to receive the salt in equal distribution. After being thoroughly worked it should at once be packed down for future use or market, and never exposed to the atmosphere until wanted for the table.

Important considerations about a dairy, are the kinds of milk given by different cows, some producing a rich yellow cream, others of a pale blueish cast. Where the cows are tied in stalls during milking time, the milk of each cow can be put in separate pans, so that her cream can be tested, and all those giving a yellow article can be arranged together, so that it would be an easy matter to keep the cream separate and make two kinds of butter.

It often happens that the cows' udders will become feverish, and if remedies are not applied, will continue so sometimes for an entire season. The milk from such an animal will vitiate the entire dairy where all is promiscuously mixed. One of the best remedies for fever in the udder, which we have tried, is to rub the entire bag with sour milk or buttermilk night and morning.

Some dairymen are in the practice of never allowing the young calf to suckle; we differ with such, believing that the calf will more effectually draw all of the impure secretions from the udder than can be done by the hand in milking, but so soon as all danger of a swelled bag is over, we would remove the calf and learn it to drink, and never allow it to come in contact with the dam afterwards. F.

BUCKEYE HONEY.

Editors Culturist:—In your July number you requested some apiarian to test the quality of the buckeye honey. I sold last fall to Mr. Horace Lassell, of Folsom, five swarms of bees; he has increased them to thirty good swarms, and thinks, in a few days, of making six or eight more. He *has not fed any* up to the present time. His bees, for the last eight weeks, have been at work on the buckeye, and from his

success they must have gathered a large quantity of honey. I have procured a sample of it of Mr. Lassell, which I forward to you, that you may be the judge of the quality. I sold bees to Dr. Livingston, of Pilot Hill, who stated the last time I heard from him, that they were doing remarkably well. I am fully satisfied that in the foot-hills and well up in the mountains, bees will flourish finely and gather plenty of honey. Many places in the foot-hills are much earlier than on the rivers and lowlands about them. The season about Sacramento this year is some three weeks later than the last; the button ball bush, (*cap. halanthus*) upon which we depend for pasturage in July and August, had more blossoms upon it by the 4th of July, 1859, than it now has; but we hope to have a good honey harvest yet, and think there will be honey enough in the market this season to remove the doubts in the minds of many persons as to the quality and quantity of California honey.

SACRAMENTO, July 25th. A. J. BIGLOW.

The specimen of honey from the buckeye blossom was duly received, and tested by a number of connoiseurs of sweet things, at the office of H. Gushee, Esq., San Francisco, and pronounced *perfect honey*, superior to anything in the line of sweets—womens' lips only excepted—ever before indulged in. We are willing to give our opinion upon the quality of any and all specimens that may be forwarded to us. To Messrs. Lassell and Biglow, for their favor, we modestly *touch our hat.* W.

BARK LICE ON APPLE TREES.

EDITORS CULTURIST:—Herewith I send down the second volume of CULTURIST to be bound. I am very proud of it. Although not a farmer, I have some very good trees on my ground. I would like to know some receipt to eradicate bark lice on apple trees; I have tried all the remedies that I have heard of without success; I am now using tanners' oil. Respectfully yours,

GRASS VALLEY, July 20th, 1860. GEO. W. WARREN.

We have our doubts in regard to any good effect from the use of oil or grease of any kind upon the bark of trees. It may kill the louse, but it is generally considered injurious to the tree. We refer our correspondent to the following article from a reliable source. W.

FRUIT TREE INSECTS.

THE depredations that insects are now making on the fruit trees of New England, threatens great drawback, if not entire suspension, of their cultivation. Among these and of the longest standing is the caterpillar, which builds its web-like nest in the forks of the trees, from which the inmates go out daily to plunder their living from the leaves of the trees. We have seen trees nearly defoliated at midsummer

by their ravages. Taking the leafless branches and their ill looking nests into the prospect, and they give an orchard a horrid appearance. But these ill looks are not the worst of the matter. Robbing a tree of its leaves in the very season when they are most useful and necessary to its health and productiveness, must have a debilitating effect. The life blood flows less freely—the fruit is deprived of its natural nutriment, and becomes small and in every way unnatural, and prematurely falls, a miserable apology for what it would have been under favorable circumstances. But this is not the worst of it; if the loss of one season's crop of fruit was all, the calamity would be endurable. By this untimely divesture of the leaves, the branches are most unnaturally exposed to the hot rays of the summer sun, and the severity of storms and disease works in, rendering the tree a fit subject for other depredators, and if it, in its warfare with all the enemies it has to contend with, does not make a short drama of life, it lives a sad monument of neglect — a miserable cumberer of the ground.

The preventive for the depredations of these blighting, deforming, death-waging insects, we hold to be very simple, and our individual experience goes to prove its efficacy. It is simply to destroy the nests as fast as they get large enough to be seen, and if not the first time going round, hit them again as soon as they show new life, and be sure that every nest and worm are destroyed. If any are so high or so far one side that you cannot readily wage an honorable war upon them, cut off the branch and in that way bring the enemy within the reach of your guns. It is far better to take off a few branches than to have a whole tree destroyed. We have tried this course for several years. At the first it gave us an unpleasant amount of labor, but ended in very pleasant results, for it is now a rare thing for us to see the embryo of a worm's nest. If all fruit growers would adopt the same course, how soon the country would be rid of the plagues.

The borer is of a much more recent date, and some of our nurserymen date its introduction to their ground with that of mountain ash and other forest trees that it loves to banquet on. But how it came is of little consequence, since all who have trees have indisputable evidence that it is here. Whether you of California are cursed with it we are not informed; if not now, you will probably be cursed with a visit from the officious stranger, who may, ere you are aware, treat himself to the juices of more of your fine trees than you will be willing to sacrifice to his mischievous appetite. Various preventives are recommended to ward off the borer's depredations. One will warrant that if you will wash your trees in May and September with strong potash water, that he will never visit them. Another says, wash with lye from the leach. This is certainly a very cleansing, health-giving operation and will no doubt destroy many insects, if not the borer, and kill the moss that is too apt to start on trees of rather a consumptive tendency. It is a good application. Again, we have heard that *soft soap*, diluted with water just so as to make it spread easy and even, is just *the* thing to keep them off. In this we have the lye and the oil added to form soap; whether the latter is really any benefit, is to be shown. We are of opinion, however, that the application would be good, if not followed with too long a

time of hot, dry weather, which would have a tendency to harden the soap, and so cause an injury rather than a benefit. These surmisings may be wrong, and the experiment can be tried in a small way, and the result shown—if good, it should be used.

We are very confident there is a tendency in some manures to introduce and cherish the borer, and of these we consider chips, sawdust or wood, in any form in a decomposing condition, as the very worst. It is an insect breeding,—insect harboring material. Of all manures we have tried, we prefer muck, exposed for six months or a year to the atmosphere, with a portion of lime or ashes mixed with it. The muck furnishes an open, loose soil, and the other ingredients are not only good neutralizers of the acids it may contain, but are healthful and natural food of trees.

The *bark louse.* For many years we have noticed the bark of our fruit trees more or less dotted by a hard, dry substance, so small and so near the color of the tree, as almost to forbid observation. They were thought here, to be nothing very alarming, their number was so small, and in due time they fell off. The spring of 1859 introduced a new era in their history; they had increased like the locust in Egypt. On many of our young trees they were so thick on branch and trunk, that a flax seed could hardly be set edgewise between their scaly cases. There was a foe to be met that had fastened itself on our territory, and his rank and file numbered tens of thousands. It required but a short time to see that if he was not ousted his success would be fatal to the tree, for death did not long delay its work where their number was large and no remedy applied to stop their influence. The symptoms of destruction first shown was a discoloration of the inner bark, it changing from its natural color to a dark brown with a dead appearance. As the disease it introduces progresses, the bark dries, as though subject to fever heat; the external bark cracks—both latitudinally and longitudinally, and adheres in blotches, like the bark of old and sickly trees; it adhering internally to the wood and choking its functionary organs, and of course death soon follows.

It is a question in our mind whether this work of destruction is attributable exclusively to the piercing and absorbing spears of this tiny insect, or whether a virus is not introduced by the sting of the parent insect when the egg of the louse is deposited; nor is this perhaps essential. The evil, we know, has its origin somewhere in the history of the louse. The only point of importance is how to prevent an injury, which at present presents a formidable obstacle in the way of raising trees.

If it arises from the absorbing power of the bark louse, which, of course, deprives the bark of much of its juice, killing the insect in as early a stage of its existence as possible, would bring the whole matter to a conclusion. To accomplish this, we have tried giving our trees frequent washing with a strong lye of wood ashes, which, in proper quantities, we consider a very healthful, cleansing application to either pear or apple trees. It is fatal to insects in general—is a very good antidote to poisons they may inflict, and on the whole, is rather alimentary as well as medicinal in its effects. If trees are free from insects, it pays well to use it two or three times a year, say from the twentieth of May to the tenth of September, here in New Eng-

land. If very strong, it is well to apply it just before a rain, so that if too much is applied for the benefit of the tree, its effect may be felt on insects without further injury. After giving a thorough application of this, it may be well to scrape off the scales containing the insects with an old knife; and where we have done this, as on trees where the bark was covered with them, we choose to apply lye, as soon as may be, to neutralize the poison in the bark, and which will circulate by the sap.

We have heard the application of soft soap, diluted so as to spread freely over the parts of the tree affected by the insects, spoken of as being very good, and have no doubt it has been found so, for in its composition we have the lye as before, with the addition of the oily matter of the soap—and oil or grease is a remedy often applied by farmers for the destruction of lice on animals. Why should it not be on trees? Our fears in the case would be, that unless it was soon washed off, the oily part would harden and form an unsafe application by closing the pores of the outer bark, and thereby inflict a new injury to the tree. Yours truly,

RICHMOND, Mass., June 3, 1860. WILLIAM BACON.

MOUNTAIN PRACTICE.

WE are always glad to hear from our mountain and foot-hill correspondents, upon any subject interesting to horticulturists. We have long been of the opinion that the highland districts of our state will eventually be found more perfectly adapted to fruit growing, and particularly to the finer wine grapes than the low and level country bordering the great rivers. We shall be pleased to hear from T. A. S. monthly.

FORCING BUDS THE SEASON OF SETTING.—On your statement in the CULTURIST for May, that buds could be forced into action, and a good head produced the season of setting, I have made the experiment, and with a good prospect of success. The process I adopted varies somewhat, though slightly, from that indicated by you. On inserting the bud, I cut in the tree moderately, shortening the leading branches, and by consequence checking the upward growth for a time, and leaving the elaborated matter to accumulate along the body of the tree. A week or ten days after, when the bud showed signs of having united with the new layer of wood, (forming the annular or "ring") a larger portion of the top was taken off. The bud soon began to put out new leaves, when the tree was cut back to near the place of insertion, and the dormant buds forced into action by the process of cutting in, rubbed off. From that time the new shoot has "gone ahead." I have trees budded in June that have made a foot or more of new growth, and bid fair to form a handsome top this fall.

The practice, I should think, would be desirable for yearling trees, where the buds of the previous year had failed, or by accident destroyed, as the root and stem would be of sufficient size and strength to force the new top into desired action, and repair in

some good measure the previous season's failure; while with seedlings, I should doubt its utility, or that any decided advantage would be gained, as the first year's growth is never too great generally for the healthy, vigorous growth of the bud the second season.

Fertilizers in the Mining Districts.—Immense, almost inexhaustable quantities of finely comminuted earth, mixed with surface soil and vegetable matter, called by the miners "slickings," are removed from the artificial water courses used for conducting water to the miners, (and which thread the entire mining districts) or are deposited in innumerable reservoirs of the water companies, which I consider a valuable material for the farmer and gardener, adapted particularly to our heavy granite soils. I have used this material freely the present season in *making* (literally) a good garden in a most unpromising place, with very decided benefit. Besides the fertilizing agents imparted to the soil, they are a disintegrator, preventing or lessening its tendency to "bake" under the rays of an unchecked summer's sun, and rendering it freer to atmospheric influences, and facilitating irrigation. The material should be used in a friable state, and mixed with the soil by plowing or spading, in like condition. Thus applied, it loses its own tendency to bake, while it performs the same office in a greater degree for the coarser material with which it is incorporated. This substance, along the banks of the ditches, may be used at any time, (except when too wet) while that from the reservoirs should be wheeled out or hauled at once to the field where desired and dumped in small piles, to remain for a season exposed to the action of the sun, air and fall rains, and then worked in thoroughly by plow or spade. The effect cannot but be in a high degree lasting and beneficial.

Manure for Potatoes.—A fact, *not* the result of an experiment, but as good. In planting some potatoes in the spring, I used as a manure for a portion of them the litter and excrement from a pig sty—generally considered as among the richest. But this material having become exhausted, I had recourse to a compost of wood ashes, rotten chip litter, and "slickings," or sediment from the water ditches, in about equal parts. Those with the hog manure had the advantage of two weeks earliest planting; both were dug about the same time, (for early use). The tubers in the drills were about equal in numbers, but those treated with ashes, &c., were fully fifty per cent. the largest. T. A. S.

Gold Hill, Placer Co.

THE RAT-TAIL CACTUS.

THE New York *Leader*, in giving a sketch of the late Mike Walsh, relates of him, when a member of Congress, the following:

"At the foot of the capitol gardens, in Pennsylvania avenue, (on the right hand side as you are fronting that building) is an inclosed space—national property—containing one or more tenements, and some conservatories and hot-houses. Here

for some years past, and until his death, enjoying Uncle Sam's patronage, sojourned a Frenchman, learned in botany and many other sciences. Some companions, while passing these premises, were vaunting his acquirements to Mike, who, from a spirit of contradiction, called them in question. He doubted whether these eminent botanists knew the difference between oats and wheat, and believed, he said, that a Bowery boy could persuade them that corn was clover. Finally, Mike undertook, "botanically," to deceive the Frenchman with whatever he could pick up where they stood, in the lane skirting his premises.

From a wreck of flower pots and rubbish, he selected one sound pot, and a dead rat lying near the heap. Placing the rat in the flower-pot, he covered it with mold, leaving out the tail, which he fixed perpendicularly by tying it carefully to a small green stick which happened to be "convenient" amongst the garden rubbish. He next called on the professor, and told him that a friend, Lieut. —— (whose ship having touched at one of the islands of the then *terra incognita* Japan, had excited some interest) had presented him with a very curious kind of cactus. This he wished the professor to examine. No one, Mike said, had been able to make it out, and he might have it for ten years and not find five people who would; so he hardly felt justified in keeping it out of a public collection, and yet he did not like to part with a keepsake from a "friend."

The professor eagerly repaired to examine the vegetable curiosity. After a close inspection, he determined what it was, or at least christened it by a fine Greek name —two words, Mike said, averaging sixteen letters. The professor exhausted himself in persuading Mike that the interests of science required that he should sacrifice to them the sentiments of friendship, by presenting this rare production of the vegetable kingdom to the botanist. The reluctant Mike eventually consented, on the willing and solemn assurances of the professor that it would be tended with the utmost care, and so it was. Placed in a hot-house, it was cautiously and carefully besprinkled with water at a temperature of seventy degrees by the thermometer.

It was noticed and described in the National *Intelligencer*. The notice was copied into other papers. The plant was exhibited with pride to several eminent individuals. At length, with the heat and moisture, the tip of the tail began to excoriate. The professor was delighted—it was budding. It was examined with great interest by one of the chief patrons, "the great Daniel," whom the botanist promised one of the first slips for Marshfield.

"It was too good a joke to keep," said Mike, "especially in a hot-house; so before long they smelt the rat." The wrath and shame of the professor was excessive, and so was the indignation of "the great Daniel," not at the author of the joke, but at the unfortunate botanist, whom he stigmatized as a "frog-eating Frenchman, through whom he had been taken in, and who ought to have known better."

WONDERS OF THE DEEP.

MR. GREEN, the world renowned diver, who was in this city last week, has much interested us by his vivid accounts of what he has seen below the waters. We give from his book some sketches of his adventures near the Island of Hayti, on the Silver Banks.

"The banks of coral on which my divings, narrated in the previous chapter, were made, are about forty miles in length, and from ten to twenty in breadth. On this bank of coral is presented to the diver one of the most beautiful and sublime scenes the eye ever beheld. The water varies from ten to one hundred feet in depth, and is so clear that the diver can see from two to three thousand feet, when submerged, with little obstruction to the sight.

The bottom of the ocean in many places on these banks, is as smooth as a marble floor; in others it is studded with coral columns, from ten to one hundred feet in height, and from one to eight feet in diameter. The tops of those more lofty, supporting a myriad of pyramidal pendants, each forming a myriad more; giving the reality to the imaginary abode of some water nymph. In other places the pendants form arch after arch, and as the diver stands on the bottom of the ocean, and gazes through those in the deep winding avenue, he feels that they fill him with as sacred an awe as if he were in some old cathedral which had long been buried beneath "old ocean's wave." Here and there, the coral extends even to the surface of the water, as if those loftier columns were towers belonging to those stately temples now in ruins.

There were countless varieties of diminutive trees, shrubs, and plants in every crevice of the coral where the water had deposited the least earth. They were all of a faint hue, owing to the pale light they received, although of every shade, and entirely different from plants I am familiar with, that vegetate upon dry land. One in particular attracted my attention; it resembled a sea-fan of immense size, of variegated colors, and of the most brilliant hue.

The fish which inhabited those Silver Banks, I found as different in kind as the scenery was varied. They were of all forms, colors, and sizes—from the symmetrical goby, to the globe-like sun-fish; from those of the dullest hue, to the changeable dolphin; from the spots of the leopard, to the hues of the sun-beam; from the harmless minnow, to the voracious shark. Some had heads like squirrels, others like cats, and dogs; one of small size resembled a bull-terrier. Some darted through the water like meteors, while others could scarcely be seen to move.

To enumerate and explain all the various kinds of fish I beheld while diving on these banks, would, were I enough of a naturalist so to do, reqiure more space than my limits will allow, for I am convinced that most of the kinds of fish which inhabit the tropical seas can be found there. The sun-fish, saw-fish, star-fish, white shark, ground shark, and blue or shovel-nose shark, were often seen. There were also fish which resembled plants, and remained as fixed in their position as a shrub. The only power they possessed was to open and shut when in danger. Some of them resembled the rose in full bloom, and of all hues. There were ribbon-fish, from four

to five feet in length. Their eyes are very large, and protrude like those of the frog. Another fish was spotted like the leopard, from three to ten feet long. They build houses, like the beaver, in which they spawn, and the male or female watches the ova until it hatches. I saw many specimens of the green turtle, some five feet long, and I should think would weigh from four to five hundred pounds.

In diving here, we are often surrounded by sharks. They would swim cautiously towards me, as if to ascertain what I was, and I found it necessary to wear hoops of iron, for just the opposite purpose of that for which ladies wear them at the present time. It was to protect me from sharks, not to attract them. These hoops were only necessary while ascending or descending, as no danger was apprehended from them except while in motion. The shovel-nose shark is a most terrible and powerful enemy to encounter. Its jaws are furnished with three rows of very strong sharp teeth, almost transparent, the upper and under sets, when closed, forming nearly a solid mass of bone; so accurately do they fit each other, and of such tremenduous power are they, that one we caught snapped off a white ash oar so suddenly, that I came to the conclusion that one of my limbs caught in the same situation, would be of little service to me in the future.

We were often obliged to defend ourselves from this ravenous fish with our pikes —an instrument with two lances, the one straight, and the other bent to about a right angle to the other. As they came near me I would strike them beneath with this instrument, the hook penetrating their bellies, and as they wheeled to swim away, it would often rip them half their length, and their inwards would drop out into the water; as they fell, this ravenous fish would turn and devour its own offal. The blood staining the water would attract others of the same species to the place, and these voracious monsters would at once devour their wounded comrade.

Had the shark darted at me, as he often does to secure his prey, resistance to his force would have been impossible; but he seemed to doubt if the object was eatable or not. This gave me an opportunity to use my pike with telling effect. The specimen of the white shark which we killed, measured twenty feet in length, and five feet across the head; but I did not receive the least harm from any animal while diving on those banks.

The smaller inhabitants of this watery domain did not venture near enough to what seemed an unwelcomed visitant, to receive my instrument of defense, unless it was when I was rising to the surface, when, like curs on *terra firma*, they followed their retreating enemy even to the surface, often attacking my armor, and leaving such marks of their vengeance as to make it require repairing. As I sank down it was quite different; but a fish or two at first would come near me, and then instantly disappear; but they would soon return with shoals of their kind, and after sailing around me once or twice, the fish of one shoal would attack that of another, and in the battle many would be slain on each side, and drowned by their adversaries.—*Ports. Jour.*

SOMETHING ABOUT THE VINE.

WE quote a few passages from a paper read before the Dublin Horticultural Society, by J. Knight Boswell, on the subject of introducing the grape vine into the south of Ireland for cultivation:

In the American species of the vine, it partakes of the same character as the hop plant, being also polygamous. A similar remarkable character has been observed in the strawberry plant also in America. In the physiology of botany there is no part of the science more interesting than the modes by which plants perfect their flowers, adapting themselves to their peculiar situations; evidencing throughout the design and hand of the Creator. A limestone, gravelly substratum, clay combined with sand, lime and crushed phosphates, form the best soil for a vineyard, the rootlets of the vine delighting in light, friable, and porous soils. It must be well trenched and drained. In reference to the quality of soils, we have, on the authority of French chemists, that Burgundy wine owes its character to a clayey soil, combined with lime; Medoc to a sandy soil; Champagne from soil where lime predominates, and Hermitage from a granite soil.

Strong and stimulating manure is most dangerous to the vinous property of the grape. The general rule in wine-producing countries is to manure only with its own cuttings, or the refuse of the grape when pressed, which contain tartar, essential to the vinous property of the grape. Excessive richness of the soil, though it gives a larger crop, and the best fruit for the table, detracts from the character of the wine. There have been several remarkable instances of this fact; amongst others, the celebrated vineyard of Johannisberg, which some fifty years since having been richly manured, it for several years afterwards produced a grape which gave wine of an inferior character, and much deteriorated in quality. It took twenty years before the soil became sufficiently poor to restore the vinous quality of the grape. Soils which produce choice and rare wines are never manured with any description of fœtid manure, generally applied for the purpose of fertilizing land; but wool, horn, bones and the cuttings and refuse of the vine itself, being only used. The scientific botanist tells us that the vine only takes up from the earth carbonic acid, ammonia, etc.; practice and experience, both ancient and modern, affirm the contrary.

The chemical properties which the soil should possess for the culture of the vine is an important consideration. The principal constituents of the grape are the tartaric acid, derived from potash in the soil; saccharine, obtained from phosphates, and converted by fermentation into alcohol. It is for this reason that bones deprived by heat of fat, consisting principally of phosphate of lime, exert such a beneficial influence on the growth of the plant, in the development and formation of the seed and fruit; and, therefore, in all vine borders, and in potted vines, bone dust is largely used.

Phosphates fatten the grape; potash gives tartar, which produces the vinous property so essential to the production of good wine; and for this reason it is that the leaves and cuttings of the vine, which contain tartar, are the best manure for the

grapes intended for wine. In warm countries the quantity of tartaric acid is insignificant, and in cold ones the saccharine is proportionably small; thus, wine made from grapes in Spain contains more alcohol, and is stronger than those of the Rhine. The Rhine wines contain but little alcohol; but the tartaric acid is largely present, and they are, therefore, more acid than those of France or Spain, but are not so intoxicating. The presence of alcohol in wine is essential, because wine will not keep without a proportion either of alcohol or of another substance, termed tannic acid. Tannic acid is created, during fermentation, from the skin, stones and green stalk; it is for this reason that where alcohol is wanting, grapes are pulled while the stalk is green, for the purpose of extracting, by fermentation, the tannic acid. The general rule for gathering the vintage is when the stalk is turning brown. If the coldness of our climate should cause an undue amount of tartaric acid, the addition of sugar would correct the acid and create alcohol. The object of the grower here would be to mature the vinous property of the grape. Before the grape becomes ripe, it contains a large proportion of tartaric acid, which decreases as it ripens, and the saccharine increases in quantity.

The fruit of the vine depends upon climate, atmospheric influence and light, as well as soil. Take the grapes of any one vine—leave one bunch open to the influence of a very hot sun, by removing the leaves; permit another bunch to be protected by the leaves; cover another with a bell of clear glass; one other with dark glass or oiled paper, and you will find a graduated improvement—the grape by the latter mode being a finer scented fruit than by the previous modes. It thus appears that a hot sun is not only injurious to the vinous property of the grape, but also to its aroma, it always ripening better under the leaf; and as the black grape ripens earlier, its culture in this country is recommended. The soil in some vineyards requires to be constantly renewed. We may easily conceive how soon the vine, planted in some of the artificial beds made in crags and fissures of the Rhine mountains, and similar localities, absorbs all the nourishment from the poor soil which feeds it, which obliges the grower to give a fresh supply when required. Many vineyards are so rich that they do not require the soil to be renewed; and some in France are in the same condition they were in centuries ago, as may be seen in the neighborhood of Toulouse and Bordeaux. I have seen luxuriant vines of a very advanced age in some of the rich soil margining the lake of Como; while high on the mountain they were of a stunted growth. In reference to the age of the vine, we have the authority of Pliny and Strabo that vines in their time attained upwards of five hundred years of age, and were sawn into planks for domestic purposes. In the city of Populonium, there was a statue of Jupiter formed of the trunk of a single vine, which for ages remained proof against all decay. The celebrated vine of Hampton Court bears evidence of the age to which the vine retains its productive powers, furnishing upwards of two thousand bunches annually.

A change is gradually taking place in the culture and management of the vine, many growers turning their attention to produce, and not quality; the modern introduction of manuring, by giving a much larger return, being found to pay the grower

better than the old system. For choice and rare wines, this remark, however, does not apply. The rule for the culture of the vine for fruit produce is the reverse of that for wine growth. In the case of fruit only, a large supply is necessary to fatten the grape. Several varieties of the black grape and many of the white varieties are recommended for open air culture. The white is the sweeter grape, and is largely grown in the south of England, where one may see the vine trained in front of the houses, and the bunches sometimes covered with paper cones. This grape resembles much those of Fontainbleau. The vine is of all plants the most manageable; it may be grown in the open air against a wall with a southern aspect, or, like the raspberry, in what is termed the bush culture, or trained along the ground. It will, in fact, assume any form or shape the grower desires. The vineyard, if not planted against the face of a rock, may be against dwarf walls made from stones, collected in the clearing of the land. Grapes grown on the bush are larger, ripen better, and are protected from hail and rain by the leaves. The reason for their ripening sooner by this mode of culture is, the sun's heat is reflected from the ground, and this heat is partially contained in the soil during the night, and keeps the plant warm, thereby pushing it into quicker growth.

WILD ORANGE GROVES.—Nothing can be more gladdening to the traveller, when passing through the uninhabited woods of East Florida, than the wild orange groves which he sometimes meets. As we approach them, the rich perfume of the blossoms, the golden hue of the fruits that hang on every twig, and lie scattered on the ground, and the deep green of the glossy leaves, never fail to produce the most pleasing effect upon the mind. Not a root has been mutilated by the spade; not a branch has suffered from the pruning knife; and the graceful form of the tree retains the elegance it received from nature. Raising their tops into the open air, they allow the uppermost blossoms and fruits to catch the unbroken rays of the sun, which one might be tempted to think are conveyed from flower to flower, and from fruit to fruit, so rich and balmy are all. The pulp of these fruits quenches your thirst at once, and the very air you breath in such a place refreshes and invigorates you. Some of these orange groves are a mile in extent. Their occurrence is a sure indication of good land, which, in the southeastern portion of the country, is rather scarce. The Seminole Indians, and poorer squatters, feed their horses on oranges, which these animals eat with much relish. The immediate vicinity of a wild orange grove is of some importance to the planters, who have the fruit collected and squeezed in a horse-mill. The juice is barreled up, and sent to different markets, being in request as an ingredient in cooling drinks. The straight young shoots are cut, and shipped in bundles, to be used as walking sticks.

FRUIT WINES.

WE notice many fruit growers are turning their attention to the manufacture of wines from the surplus of fruits over what are consumed in a green or fresh state. It is a fact, account for it as you will, that a taste for home wines and beverages is rapidly growing up amongst us. For the past two years considerable quantities of wine have been manufactured from the rhubarb and blackberry, and this year the quantity will be largely increased, as well as the variety of fruit used for the purpose. Over twelve thousand gallons of raspberry wine will be made in Oakland and Alameda, whilst a still larger quantity than this will be made from the blackberry, as most persons deem it superior to any other berry for wine purposes.

One firm in San Francisco gave an order to Col. Lansing, of Oakland, for one thousand gallons of raspberry wine, but he has made two thousand five hundred gallons. J. D. Woolsey, of the same place, has made two thousand gallons, and they are not through for the season yet, whilst the blackberry season is but just fairly commenced. In Sacramento, parties are buying up all the blackberries they can get, to be converted into wine. We have no doubt but experiments in wine making from other fruits than grapes will be greatly extended, and as sugar is an important ingredient in their manufacture, we submit the views of PROF. MAPES, of the *Working Farmer*, in regard to the quality of the sugar that ought to be used for this purpose.

"Wines may be made from the currant, rhubarb, strawberry, blackberry, and gooseberry, of excellent quality. Inferior but quite palatable wines may be made from parsnip and many other roots. While we admit that the true wine must be made from the grape, still, from the want of a more appropriate name for beverages made from fruits other than the grape, we call them wines.

"The great mistake in these manufactures is in the use of sugar of inferior quality; double refined is not sufficiently pure to manufactue either of these wines of the best quality; treble refined sugar should be used—that of inferior kind contains gum, and after the fermentation this gum becomes fetid, and its disagreable odor has to be overcome at the expense of the odor of the fruit, and therefore should never be used. Brown sugar, no matter of how good a quality, will not make wine, for when fermented that portion which is like molasses in flavor, if separated from the sugar, as in the process of refining, becomes a rank rum, and not sufficiently delicate as the preserving alcohol of the result. When grapes are fermented, the sugar or saccharine matter is not coverted into rum, but into an undistilled brandy of an unobjectionable flavor.

"In making fruit wines, alcohol should never be added; a sufficient quantity will be produced by the fermentation to preserve the product, and any further addition injures the quality and arrests the fermentation. When alcohol is added, fruit wines do not improve at all by age.

"The common practice of racking cider has caused many to rack wines; this is wrong. When the proper amount of the juice of a fruit, and treble refined sugar in

solution, is placed in a barrel with the bung loose, in a cellar of even temperature, fermentatation will readily commence, and will proceed until the sugar or a portion of it is converted into alcohol, when it will cease. The buffy coat which rises to the surface will then settle and attach itself to the cask; the bung should then be driven in, and in six months the wine may be drawn off and bottled. No alcohol will be necessary to keep it."

It is a favorite theory of some writers that *wine* can only be made from the juice of the grape; thus we see in the Patent Office agricultural report for 1859, an attempt to sustain this position in an article by Charles T. Jackson, M. D. He says:

"Wine is properly the fermented juice of grapes, and contains alcohol, variable proportions of grape-sugar, bi-tartrate of potash, and some tartrate of lime, with a very little malic and tannic acids, and some mucilagenous matters, besides oenanthic acid, and in old times, oenanthic ether, and some volatile oils, derived from the grapes, or produced by fermentation.

"The tartrates are characteristic of the wines produced from the grape, and do not characterize femented currant, gooseberry, or apple juices; citric acid being contained as the chief acid of the currant and gooseberry juice, while malic acid is that of the juice of the apple. Currant and gooseberry juices, therefore, are not wines, but are similar to punch made of lemon juice and alcohol, sweetened. Fermented apple juice is not a wine, for it does not contain the tartrates, nor any tartaric acid, but does contain malic, acetic, and tannic acids. If we intend to produce wine, we must resort to the juice of grapes exclusively."

Now if the beverages made from the juices of other fruits than grapes are not wines, neither are the thousands and tens of thousands of gallons of so-called *wines*, manufactured from one-fourth that quantity of grape juice, with a proper addition of acids and sugar, in the wine cellars of San Francisco, entitled to the appellation of *wine*. That large quantities of so-called "California wines" are thus manufactured, we have every reason to believe. If this is not the case, how is it that the dealer in such wines is able to turn off double the quantity of wine to the grape juice purchased for its manufacture? But we are willing to admit that such beverages are wines; and more than this, that what may at first view appear like adulteration or imposition in the wine-maker, may really be practiced to a certain extent without detriment to the character of the wine produced. In proof of the correctness of our admission, we extract, also, from the agricultural report of the Patent Office for 1859, something of the views of "Drs. Gall and Petiol's method of wine making, according to the modern principles adopted in Germany and France."

"In consequence of many failures in the ripening of the grapes, and diseases spreading rapidly over the continent, more or less destroying the crops of whole districts, grape culturists and chemists began to look for remedies and substitutes for those principles in which the vintages are deficient.

"Much has been said against this method, and much suggested to neutralize predominating acids without resort to sugar and water, but all experiments have thus far failed; either the wine would get flat at once, or be unfit for use on account of its

harshness. More than fifty years ago, Chaptal, Cadet de Vaux, and other eminent chemists, suggested that poor wines might be improved by adding sugar; later, Claudot-Dumont urged his countrymen to abstain from the bad practice of sweating and mixing their poor wines, and recommended sugar as the best agent to improve them. But neither of these chemists were able to point out in what proportion sugar should be used to obtain the desired result. This problem has finally been solved by Drs. Gall and Petiol, and approved by such men as Thénard, Döbereiner, Von Babo, Bronner, and others.

"Drs. Gall and Petiol both discovered, after many analytical experiments and researches, that the surplus acids in the grape-juice can be turned to good account, by bringing its other ingredients (sugar and water) to a proper proportion. Every kind of grape-juice is nothing but clear water, in which are dissolved from six to thirty per cent. of sugar, two to four per cent. of free acids, and from three to five per cent. of other matter, or the essence of wine-making principles. Sugar converts itself into alcohol by fermenting, and two per cent. of sugar will produce, in the average, one per cent of alcohol; the free acids, if they are in proportion to the other principles, give the wine its agreeable vinous character, its flavor, &c.; the last properties contain the principles necessary for fermenting, fining, and keeping. Dr. Gall has further proved the fact that these different acids in the grape do not require particular notice; it is sufficient to find out the whole sum, and then treat them alike. In order to ascertain what per centage of sugar and acids the must, or grape-juice, contains, two different instruments are required: a "must scale," and an "acidimeter;" for the first purpose, *Oechsle's must scale* is generally used, and *Otto's acidimeter* for the second; on both are the following calculations based, illustrative of this method. None of these instruments have been yet introduced into our country, but it may be presumed that when a demand for them shall be manifested, some of the leading druggists will respond, and import them. They may, however, be procured at any time direct from the manufacturers, Dr. L. C. Marquart, of Bonn, on the Rhine, or J. Diehn, Frankfort-on-the-Main.

"Experiments, continued for eight years, have proved that, in favorable seasons, grape-juice contains, in the average, in 1,000 pounds—

Sugar	240 pounds.
Free acids	6 pounds.
Water	754 pounds.
	1,000

Which proportion may be set down as a normal; therefore, to obtain good wine from a vintage of inferior quality, these proportions must be secured by adding sugar and water. It will be seen that the contents of the acids are the indicating point as to what quantities of sugar and water would be required to bring the wine to such a normal state; further, as has been the case generally, the less sugar the more acids. The per cent. of acid in the grape-juice is the basis on which a calculation must be founded.

"All practical grape-growers and wine-makers in Germany and France admit that a wine containing the proportion of sugar, acids, and water above described, is in every respect preferable to heavier or lighter wines. It has lately been called a "normal wine," and will serve here as well as a standard.

"When a must contains, instead of twenty-four per cent., only fifteen per cent., or instead of two hundred and forty pounds, only one hundred and fifty pounds of sugar, but instead of only six per cent. or pounds, nine per cent. of acids in one thousand pounds, the question arises, how much sugar and water will have to be added, to bring such a must to the proportion of a normal wine? To solve it, we calculate thus: if in six pounds of acid, in a normal wine, two hundred and forty pounds of sugar appear, how much sugar is wanted for nine pounds of acids? Answer: three hundred and sixty pounds. And again: if in six pounds of acids, in a normal wine, seven hundred and fifty-four pounds of water appear, how much water is required for nine pounds of acids? Answer: one thousand, one hundred and thirty-one pounds. As, therefore, the must which we intend to improve by neutralizing its acids, should contain 360 pounds of sugar, 9 pounds of acids, and 1,131 pounds of water, but contains already 150 pounds of sugar, 9 pounds of acids, and 841 pounds of water, there remain to be added, 210 pounds of sugar, 0 pounds of acids, and 260 pounds of water.

"By ameliorating a quantity of 1,000 pounds must
by 210 pounds sugar,
and 290 pounds water,

we obtain 1,500 pounds of must, consisting of the same properties as the normal must, which makes a first-class wine. The increase of the quantity is five hundred pounds, or two hundred and fifteen quarts, which after deducting the outlay for sugar, two hundred and ten pounds, at twelve and a half cents per pound, amounts to twenty-six dollars and twenty-five cents, and, allowing fifty cents per quart, leaves a clear profit of eighty-one dollars and twenty-five cents.

"Another illustration, which probably comes near the qualities of northern wild native grapes—already largely manufactured into wine, but, for want of knowledge, seldom accepted in market—may be thus calculated: Such grape-juice, or must, contains twelve per cent., or one hundred and twenty pounds of sugar, and fifteen per cent., or pounds of acids. One thousand pounds of such must will consist, then, of one hundred and twenty pounds of sugar, fifteen pounds of acids, and eight hundred and sixty-five pounds of water. In order to neutralize these acids, and make them proportionate, corresponding with wine of a good character and normal state, it will require to 15 pounds of acids, 600 pounds of sugar, and 1,885 pounds of water; as the must contains 15 pounds of acids, 120 pounds of sugar, and 865 pounds of water, have to be added 0 pounds of acids, 480 pounds of sugar, and 1,020 pounds of water.

"Such improved must will, therefore, consist of—

15 pounds of acids,
600 pounds of sugar,
1,885 pounds of water,

2,500 pounds.

"Deducting one thousand pounds of must, which furnished the wine-making principles, acids, &c., gives a surplus of fifteen hundred pounds, or six hundred and forty-five quarts of must in a normal state. Value of six hundred and forty-five quarts, at fifty cents per quart, three hundred and twenty-two dollars and fifty-cents. Cost of four hundred and eighty pounds of sugar, at twelve and a half cents per pound, sixty dollars. Net profit, two hundred and sixty-two dollars and fifty cents.

"It will be seen that such wine is produced at the small expense of nine and a quarter cents per quart, omitting the one thousand pounds, or four hundred and thirty quarts, which furnished the wine-making principles But a true estimate of the cost of such a wine from the native grapes, when they have to be bought, must be calculated thus:

3,000 pounds of grapes, at $3\frac{1}{2}$ cents per pound	$105
480 pounds of sugar, at $12\frac{1}{2}$ cents per pound	60
	165

"And as one hundred and sixty-five dollars makes two thousand five hundred pounds of must, or one thousand and seventy-five quarts, the actual expense is fifteen and one-third cents per quart; allowing interest on capital invested for apparatus, casks, shrinkage, and labor, the whole expense will not average twenty cents per quart.

"An immense field of profitable employment presents itself to industrious men. In a favorable season, a man will gather five bushels of wild grapes in a day, from which he obtains at least eighty quarts of natural wine, while if ameliorated according to Drs. Gall and Petiol, he will get one hundred and twenty quarts of good normal wine.

"It is further proved that such wines, made according to these principles, mature at least in half the time required by natural wine, and keep better; consequently, permitting a quicker return of invested capital, a better article for speculation, safe transport to distant markets, &c. Thus, too, a good wine can be made of an inferior vintage, grown in an unfavorable season, and the quantity of a richer vintage increased two hundred per cent., without the least detriment to its quality. It is very important that this method should be introduced into our country; it will not only encourage people to more activity in this lucrative branch of industry, but will furnish us with a wholesome and pleasant beverage; insuring us a pure, cheap article, a large consumption, and a ready sale.

"Grapes properly cultivated in vineyards or gardens, and in favorable climates and localities, will generally contain sufficient sugar, and no surplus of acids; so it may appear that there is no need to practice this method. But Dr. Gall and others found, by analyzing the husks or pomace, after the juice had been extracted by means of powerful presses, that these not only still contained a considerable amount of juice, but also a great amount of extracts, or wine-making principles, in many cases sufficient for three times the bulk of the juice previously obtained. This fact suggested the question: as there are so many of these valuable properties left, and only sugar

and water exhausted, why cannot these principles be substituted till the others are completely used up? It was found that it could be easily done!

"The secret of making wine from water was thus solved, and an all-important principle for wine-making established. By further experiments, these speculations not only proved to be correct, but it was, in most cases, impossible to judge which was natural wine, or which the product of this new method; indeed, the preference is generally given to the latter. While natural wine is so very different, according to circumstances which prevail in its growth, such "Gallized" wine is always in perfect harmony, because its contents are not the results of chance, but the close following of the process of Nature."

From the foregoing it would appear that, with the addition of sugar and water in the proper proportions, where the acid is in excess, a largely increased quantity of really pure wine is the result; so that what at first might be deemed adulteration of native wines, is really, according to this view, no adulteration at all, but when properly managed, resulting in an increased quantity and a better wine than would have been produced. We shall renew the subject of wines and wine making in our next number. W.

SORGHUM SIRUP.

WE have received a communication upon the subject of sorghum sirup; the writer asking for information as to the mode of management previous to crushing the canes, the kind of mill best adapted to crushing them, the season of doing it, cost of mill for crushing, best arrangement for boiling; in short, all about the manner of converting the canes, or their juces, into sirup or sugar. We have never had any personal experience in the working up of Chinese sugar-cane; but we have seen a great deal of written information upon the subject, all going to show that there is no mystery at all connected with it; but that any man of plain, common understanding, can manufacture from well-ripened cane, a first-rate article of sirup, and with a little experience, a fair article of sugar.

The crushing-mill can be had of either wood or cast-iron, at a cost of from forty to one hundred and fifty dollars, depending upon size and quality: cast-iron mills can be obtained in San Francisco; they are adapted to either horse, steam, water, or wind power; are very simple in construction, and very effective. The cane should be allowed to fairly ripen its seeds, in order to obtain the fullest return for land and labor; but it is believed by many that more sirup is obtained where the seed is gathered by topping the canes before quite fully matured. As the seed is considered to be worth as much as oats, or more, and as all agree that its ripening does not very materially lessen the saccharine yield, it is probably the best policy to let the seed ripen; and yet it should not be permitted to remain on the canes for a day longer than is necessary to secure the germinating principle fully matured. Two joints of the cane should be cut with the seed, as it is found to yield but little valuable sirup,

and is worth more as a winter food for cattle. The remainder of the canes should then be cut close to the ground, and as speedily as possible passed through the rollers, and the sirup to the evaporating pans or boilers, with equal dispatch. The sirup should never be allowed to rest for a half hour before it feels the heat of the boiler, as it is very prone to fermentation, and this once commenced, it is next to impossible to make a superior sirup, and it cannot be converted into sugar; the reason of this is, that the presence of acid, the result of fermentation, is antagonistic to the crystalilization of the sirup into sugar.

Shallow pans are preferable to deep kettles for evaporation; the juice should be carefully strained before heating, and cleanliness should be considered essential in every part of the process. There is no necessity for the use of clarifiers, as lime or alkali, in the manufacture of an excellent sirup from sorghum, if care be observed to prevent fermentation of the juice before boiling. Before the season arrives for making sirup or sugar, we will endeavor to give more minute directions in regard to the making of a superior quality of both, from the juice of the sorghum. W.

PEACH LEAF BLIGHT.

A FEW days since, in conversation with a peach grower of celebrity among the foot hills of the Sierra Nevada, he stated that having had occasion to run a high board fence between the rows of a part of his peach orchard, in a direction east and west, early in January last, that of the same varieties of peaches, the row standing close to the north side of the fence was wholly exempt from the curl, whilst those put a few feet from the fence on either side suffered sevcrely. The only possible effect the fence could have had over the row on its north side, as differing from all other rows in his orchard, he thinks, was the shading of the ground preserving the surface roots of the trees from the too early stimulus of the sun's rays. He believes the curl to be caused by a too sudden and abundant flow of sap into the newly formed leaves.

Corroborative of his belief, he instances two of his trees situated in low grounds where tailings from a mining sluice had covered the natural surface of the ground around the trees during the winter to the depth of ten or twelve inches. Not a leaf upon these trees was affected by the curl. They were slow in starting in the spring, but are now filled with fine looking fruit. Almost all who have given the subject their attention, believe the evil to arise from a superabundance of sap forced into the newly formed and tender leaves. May not the shading of the ground, as by the fence, or an additional foot of earth as a mulch, have the effect to retard the otherwise excessive flow of the early sap, and thus save the tree or leaf from injury? If this should prove true, and the surface roots be found in excess over the more deeply running ones, would not pruning the surface roots have the effect to retard the too profuse flow of sap? Another year will find many persons experimenting upon the causes of, and remedies for, this disease, and we hope attention will be given to the

condition of the roots as well as the limbs of the tree throughout the fall, winter and spring.

A further interview with Mr. S. W. Shaw, whose views of the curl we gave in our July number, convinces us that the disease may possibly have its origin in the condition of the trunk and limbs of the tree, quite as much as in the roots. He instances trees that are—as some term them—bark-bound, as more likely to be attacked than those whose full and vigorous growth the summer and autumn preceding left both the tree and its bark in full health. An early check of the summer's wood growth, caused either by lack of moisture or excessive fruit bearing, has a tendency to bark-bind the tree, rendering it the next year more liable to the disease, from the fact that such bark-bound trees do not admit of that full return of elaborated leaf sap so necessary to health and vigor. We think it a favorable omen for the future of the peach culture of our state, that so many are giving this disease of the peach leaf their careful investigation; it must result in good to our pomological interests. W.

RHUBARB PUDDING.—Much obliged for the information respecting the Osage orange; and, as one good turn deserves another, perhaps this little item may be useful.

It may not be known to all that in using the rhubarb or pie-plant, it is not necessary to remove the peel from the stalks, if they are drawn while tender, and they are so while the leaf remains fresh and green, cut in small pieces, washed in clear cold water and cooked as soon as possible. I know it will keep well for a few days; but it is certainly better when drawn as you wish to use it. If it is, after being washed, placed in a pan with a very little water, set the pan over the steam of boiling water and cooked as quickly as possible, adding the sugar a few minutes before removing from the stove, it makes an exeellent sauce, or will be found better for pies thus prepared than putting the raw stalks into the crust—as in that case the crust must be cooked too long in order to allow the rhubarb time to cook. We use it very freely, and find it extremely wholesome.

I will add a recipe for a pudding. You can use it or not, as you please.

Take two ounces of sifted flour, a little salt, one cup of finely chopped beef suet, one teaspoonful of bread soda, sifted dry into the flour, and two of cream tartar, (if you have no sour milk) use sufficient milk, (water is very good if milk is not to be had) to make a very stiff batter. Grease a tin pudding mould, or a deep tin pail will answer; have ready a large saucerfull of chopped rhubard; drop in a layer of the batter, and then a layer of the rhubarb; put a large spoonful of nice brown sugar over the rhubarb, then fill the tin two-thirds full with alternate layers, and set it in a pot with just enough boiling water to steam it well; do not have enough to boil over into the tin, and take care it does not all boil away; always fill up with boiling water; steam in this way an hour and a half or two hours; serve with sweet sauce, and if made as above, it will be found very light, and an excellent substitute for an apple pudding; and there are yet many parts of the state where apples are not easily to be had.

Your obliged READER.

Editors' Repository.

As a prominent feature of the present number of the Culturist, will be found the schedule of premiums offered by the Califoraia State Agricultural Society at its seventh annual fair, to be held in the city of Sacramento, commencing on the 19th of September. We give the schedule a place on our pages without compensation, being willing to lend any and every aid in our power to forward the interests of a society that has thus far proved an honor to the State, and of immense benefit to its agricultural, mechanical and manufacturing interests.

If any state in the Union has reason to be proud of the continued success of their state agricultural institution, it is California. Nowhere else do we find so comprehensive a list of premiums offered by any state society, or so large an amount annually distributed amongst its members. Its transactions are looked upon with more of interest by the peoples of other states and countries than can possibly attach to those of any other. California is so new and peculiar in so many of its phases of climates, soils, and productions, its perfect adaptedness to the production of so many of the more valuable products that without the greatest care are seldom produced in corresponding latitudes in other parts of the world, the astonishing magnitude of many of her products, and their superiority over those of many of the most favored regions of earth — all these give our state society and its annual report an interest and value equalled by no other state society in existence.

Throughout the entire middle and northern portion of the state, a desire is manifested to make the approaching fair superior to any that has gone before; and if energy and untiring zeal in its officers can effect so desirable a result, it will be accomplished.

Bay District Agricultural Society.—The fair of this society is to be held in October next. At a meeting of the officers and directors, on the 11th of July, the Pioneer race course at the Mission was selected as the place for exhibition of animals, and the Mechanics' Institute pavilion, for the mechanical, pomological and industrial department. Premiums are offered amounting to over fifteen thousand dollars. Mr. John Cumming, of San Mateo, was appointed agent to canvass the several counties composing the district, to stir up an interest therein, disbursing tickets of membership and receiving subscriptions and donations in aid of the society. John S. Hittell, P. E. Edmondson, A. A. Cohen, Cary Peebles and John Cumming, were appointed a committee to visit and examine farms, orchards and nurseries that may be entered for premium. It is believed that the fair will equal, if it does not greatly surpass, any ever before held in California.

Northern District Society.—We are in receipt of a complimentary ticket, with premium list and rules, for the second annual fair of the "Agricultural, Horticultural and Mechanics' Society of the Northern District of California," to be held at Marysville during the week commencing September 3d, 1860, for six days. The society offers liberal premiums, upon a large

list of agricultural, horticultural and mechanical products, that will hardly fail to draw out an unprecedented display.

The fair for the exhibition of the products of the soil and of industry, will be at the pavilion, on Cortez Square. The cattle show will be held at Lafayette Square, the avenues to which will be kept well sprinkled and free from dust. The society have a track at the cattle grounds, of a half mile, and in good order. The plowing matches will take place in the vicinity of the cattle grounds. The books will be kept open for entry of stock and articles of every description, up to 10 A. M., Tuesday, September 4th, at the pavilion and cattle grounds.

"Whatever nature or art can contribute—whatever curiosity can discover, or ingenuity devise, to illustrate the varied resources of every part of the state—those interested are invited to forward for the great exhibition. Even though they may have nothing of special interest to exhibit, let all true friends of the object be present, for the mutual interchange of views, so that the advantages of a large industrial convention may be secured.

"The society have an extensive track for the show of stock, and a covered amphitheatre that will seat ten thousand persons."

FAIR AT STOCKTON.—The first annual fair of the San Joaquin Agricultural Society will be held at Stockton on the 28th instant.

THE ADVENTURES OF JAMES CAPEN ADAMS, MOUNTAINEER AND GRIZZLY BEAR HUNTER OF CALIFORNIA; BY THEO. H. HITTELL: TOWNE & BACON, Publishers, San Francisco.—This is the title of a most interesting volume of 384 pp., just received. It is thoroughly Californian, and in a pleasing manner, without exaggeration or bombast, gives us an entertaining narrative of adventure, which fixes the attention of the reader, be he old or young. An important feature of the book, is the style of its illustration. Twelve full page engravings, beautifully printed, adorn its pages—a sample of which may be seen in our frontispiece. We predict for the work an extensive and continued sale. The following extract will give some idea of its author's style:

"Another adventure occurred about this time, which might have cost me my life; this was a combat with an elk. The morning of the day we expected to complete the trap, as fresh meat would be needed for bait, I sent my comrades ahead with the mules, but myself made a circuit for the purpose of killing a deer. In the course of a few miles, I discovered a band of five or six elks. There was one of them, a splendid buck, with five antlers, and magnificent bearing, which particularly attracted my attention. Could he have been transported, as he stood there, into the midst of the world, poets and painters would have paid tribute to his beauty; no stag of Landseer has a nobler mien, or more of the spirit of freedom in his limbs.

"It was impossible to approach nearer than seventy-five yards without alarming the band; and, consequently, I fired from that distance. The buck fell, and supposing him to be dead, I drew my knife, and, as is the usual practice upon shooting an animal of this kind, rushed up to cut his throat. The elk, however, was only wounded; and when I reached him, he suddenly sprung upon his feet, and jumped with his fore legs upon my shoulders. This knocked the knife from my hands; but hastily drawing my revolver, I discharged the barrels, one after the other, in quick succession, while hopping around to avoid his terrific lunges. Fortunately, one of my shots took effect at the butt of his ear, and stunned him; when, seizing the opportunity to grasp my knife, I ran up, plunged it to the heart, and the red tide of life spouted from his side. I then ripped him up to the bearded throat, and turned the entrails out upon the ground.

"My neck and back were severely bruised, but not enough to prevent me from shouldering my rifle, proceeding to the trap, and working there steadily until sundown. In the evening,

we passed by the spot, packed the meat to camp, and had a noble roast. While enjoying a dainty cut, I could not help remarking that it was as good as any porter-house steak; upon which observation, Tuolumne, who was of an inquiring mind, asked what was the meaning of 'porter-house steak.' I explained to him, as well as I could, that it was the choice cut of a beef. This casual conversation gave us a phrase of which we did not hear the last for many days; for Tuolumne was so impressed with the sound, that he used the words, 'porter-house steak,' long afterwards, to express the climax of excellence."

San Francisco Medical Press.—The third number of this valuable medical journal has been received. This journal, established under most flattering auspices, is sustaining to the fullest extent the expectation with which it began. There is a vigor and activity shown in its management which reminds one of the sleepless energies of the editor, Dr. Cooper, who is one of the most indomitable laborers among professional men of this coast. The success of the *Press* does not therefore surprise any one. The present number contains many articles of interest and value not only to professional, but also non-professional men. It should find a place in every well selected library on the coast.

Literary Notice.—One of the most interesting and useful publications which comes to our sanctum is the *Scientific American*, a weekly publication, devoted to popular science, new inventions, and the whole range of mechanic and manufacturing arts. The *Scientific American* has been published for fifteen years, by the well known patent solicitors, Messrs. Munn & Co., 37 Park Row, New York; and has yearly increased in interest and circulation, until it has attained, we understand nearly thirty thousand subscribers, which is the best evidence that the publication is appreciated by the reading public.

To those of our readers who may not be familiar with the character of the paper, we will state some of the subjects of which it treats. Its illustrated descriptions of all the most important improvements in steam and agricultural machinery, will commend it to the engineer and farmer, while the new household inventions and shop tools which are illustrated by engravings and described in its columns, with the practical receipts contained in every number, renders the work desirable to housekeepers, and almost indispensable to every mechanic or smith who has a shop for manufacturing new work, or repairing old.

The *Scientific American* is universally regarded as the inventor's advocate and monitor; the repository of American inventions, and the great authority on law, and all business connected with patents. The official list of claims, as issued weekly from the Patent Office, in Washington, are published regularly in its columns. All the most important patents issued by the United States Patent Office are illustrated and decribed on its pages, thus forming an unrivalled history of American inventions.

It is not only the best, but the largest and cheapest paper devoted to science, mechanics, manufactures and the useful arts published in the world. Hon. Judge Mason, formerly Commissioner of Patents, is not only engaged with the publishers in their immense patent agency department, but as a writer on patent laws and practice, his ability is forcibly portrayed in the columns of this paper.

The *Scientific American* is published once a week, (every Saturday), each number containing sixteen pages of letter-press, and from ten to twelve original engravings of new inventions, consisting of the most approved tools, engines, mills, agricultural machines and household utensils, making fifty-two numbers in a year, comprising eight hundred and thirty-two pages,

and over five hundred original engravings, printed on heavy, fine paper, in a form expressly for binding, and all for two dollars per annum.

A new volume commences on the 1st of July, and we hope a large number of our citizens will avail themselves of the present opportunity to subscribe. By remitting $2 by mail to the publishers, Messrs. Munn & Co., 37 Park Row, New York, they will send you their paper one year, at the end of which time you will have a volume which you would not part with for treble its cost. The publishers express their willingness to mail a single copy of the paper to such as may wish to see it without charge.

HAVE WE MORE THAN ONE OAK KNOLL AMONGST US?—We have noticed in our city markets for the last few days, several varieties of fruits bearing the stamp of "Oak Knoll," or so marked as to convey the impression that they are the product of the well-known fruit grounds of Oak Knoll, Napa. Now, we enter our protest against the appropriation of a name and reputation which pertains to but one locality in the state, by vendors of fruits who, having no reputation of their own, would steal that of another, who by years of indomitable effort and care, has succeeded in building up a reputation for his fruits that others may well envy. We would not so much care for the dishonorable appropriation of another's thunder, if those doing so would but furnish an article that in quality would be a credit to the locality named; but when an entirely inferior fruit is offered to that produced at the *true* Oak Knoll, we feel that a gross injustice is perpetrated. There are other districts in the state, each enjoying its own enviable celebrity for its fine, large or delicious fruits; and the proprietors of each are not afraid, but rather proud to attach their own proper names or labels; but they do not expect honorable men will counterfeit them. Previous to August first, but one basket of true Oak Knoll fruit had been brought to this market. Who are the *gentlemen* (?) that sold "Oak Knoll" fruits previous to that.

SHALLOW MILK PANS.—Among the articles selected from the *American Agriculturist* in your June number, is one on using "deep or shallow vessels for milk." Perhaps, if the writer had lived in California, his views might change, for it has been tried by a number that I am acquainted with, and all agree in using the shallow pans; not, however, from the idea that a larger quantity of cream can be obtained, but because the amount of cream contained in the given quantity of milk will rise sooner where the amount of surface is large; and a decided advantage is gained in another respect, which is, in this climate the milk will keep sweet longer where it is distributed in small quantities to cool; and surely, the sweeter the cream is kept, the finer will be the flavor of the butter.

I do not doubt that in some of the Eastern states the twelve quart pails would be as good, or better, than the shallow four quart pans, but do not think they could be used as well here, on account of the extremes of heat and difficulty of providing a very cool place to set it away. When I first made an attempt at butter-making and taking care of dairy business, I made some inquiries of a person whom I knew to be well acquainted with the business, and that was one thing particularly enforced. "Don't put too much milk in your pans." I inquired the amount. "Oh, two or three quarts, as you will find it keeps better." I took the hint, and found that in the warmest weather the milk was sweet at the end of twenty-four hours, while some of my neighbors complained that they could not keep it sweet ten hours. As to the idea of putting saleratus into the milk, I should not wish to try it, but I may say I often find it useful in sweetening the pans; by putting a little in the water used to scald them with, it removes any of the old milk which may adhere to them. C.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending June 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By Thos. M. Logan, M. D.

JUNE, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	30.103	30.088	30.064	30.103 inches.	— 0.021 inch.
" Minima	29.762	29.743	29.723	29.723 "	0.000 "
" Mean	29.900	29.890	29.869	29.886⅓ "	+ 0.020 "
Thermometer, Maxima	70.00	84.00	72.00	84.00 deg.	— 9.12 deg.
" Minima	58.00	63.00	58.00	58.00 "	+ 0.33 "
" Mean	62.70	70.00	64.23	65.64 "	— 5.26 "
Force of Vapor, Maxima	.457	.547	.524	.547 inches.	— .188 inch.
" " Minima	.323	.305	.327	.305 "	+ .026 "
" " Mean	.396	.456	.411	.421⅓ "	— .038 "
Relative Humidity, Maxima	83.00	78.00	82.00	83.00 per ct.	+ 0.63 p. ct.
" " Minima	44.00	32.00	42.00	32.00 "	+ 8.81 "
" " Mean	69.66	63.20	68.53	67.13 "	+ 4.54 "
Number of Clear Days	20	20	18	19 1-3 days.	— 2 days.
Number of Cloudy and Foggy Days	10	10	12	10 2-3 "	+ 2 "
Number of Rainy Days				2 "	+ 2-3 "
Quantity of Clouds	1.6	1.5	0.9	1.33	— 0.17
Quantity of Rain and Fog				0.017	— 0.085 inch.
1st Days and 2d, Force of N. Wind	3 1.0	2 1.5	0 0.0	1 2-3 0.8	0.0 — 1.0
" " N. E. Wind.	0 0.0	0 0.0	0 0.0	0 0.0	— 1-3 — 0.4
" " E. Wind	1 1.0	0 0.0	0 0.0	0 1-3 0.3	— 2-3 0.0
" " S. E. Wind	1 2.0	0 0.0	1 2.0	0 2-3 1.3	— 3 2-3 + 0.2
" " S. Wind	19 1.9	14 2.6	14 2.1	15 2-3 2.2	+ 6 + 0.8
" " S. W. Wind.	5 2.4	6 2.7	4 2.5	5 2.5	— 1 1-3 + 1.2
" " W. Wind	1 1.0	4 2.2	10 1.6	5 1.6	+ 3 1-3 + 0.7
" " N. W. Wind.	0 0.0	4 1.7	1 1.0	1 2-3 0.9	— 3 2-3 1.0

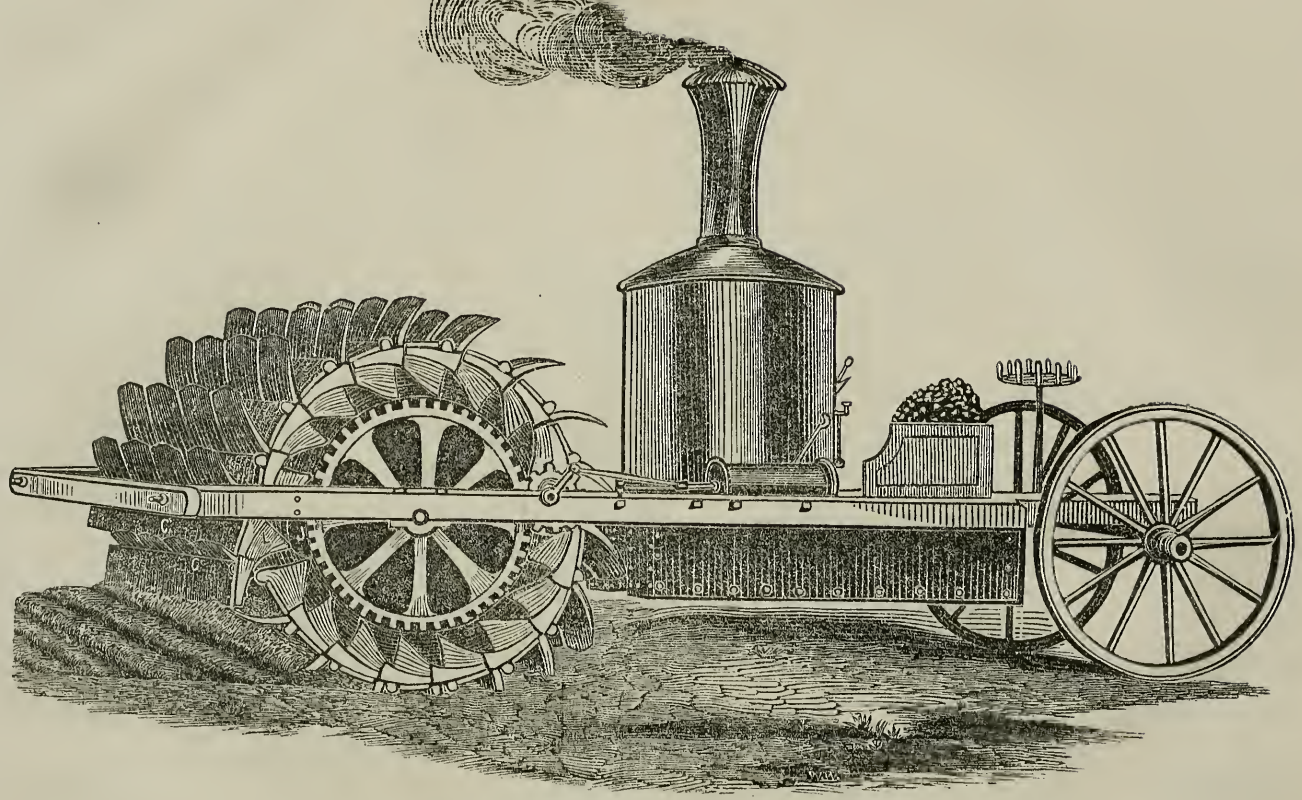
Thermometrograph.

	Deg.		Deg
Highest Reading by day on the 25th	86 00	Mean of all Highest Readings by day	72.90
Lowest Reading by night on the 6th	48.00	Mean of all lowest readings by night	53.33
Range of Temperature during month	38.00	Mean daily range of Temperature during mo.	19.57

Remarks.—The decline of temperature, alluded to in previous remarks, has continued throughout the whole month. Last year we experienced our hottest term during June, and on one day, the 22d, the thermometer rose, for a short time, as high as 102 degrees. The figures above show that the highest reading of the same instrument, in the same locality and subjected to precisely the same exposure, has been sixteen degrees less, and that the mean temperature of the month is much below the average of our eight years series of observations. This very remarkable diminution is rendered more so by the fact that since last July there have been eight months out of the twelve in which the temperature has proved minus — thus causing a deficiency in the aggregate of seventeen degrees. In order, therefore, to make up this great deficiency, and to bring up the mean annual temperature to the standard, which is sixty degrees, we must receive a considerable accession to the temperature of July and August, and probably we will experience a great deal of sultry weather during the autumn. Should these predictions respecting the temperature fail to be verified, the year will prove exceptional in this respect.

On the 22d, at 9 P. M., a comet was first seen by us, apparently five degrees above the horizon, on the confines of Lynx and Camelopardus, and distant some forty degrees from the pointers in the Great Bear. Since this date it has been pursuing its southern course towards the sun at the rate of about one and a quarter degrees per diem. It can now readily be recognized with the naked eye, between the hours of 9 and 10 P. M., by its hazy aspect and tail, as it is one of the most conspicuous objects above the horizon. Viewed with the telescope applied by us to the comet in 1858, it presents the same attenuated nucleus and nebulous surroundings that characterized the comet of Donati, to which it bears some resemblance.

Property of the
Boston Athenæum



WADSWORTH'S STEAM ROTARY DIGGER.

THE CALIFORNIA CULTURIST.

SEPTEMBER, 1860.

WINE MAKING AROUND CINCINNATI.

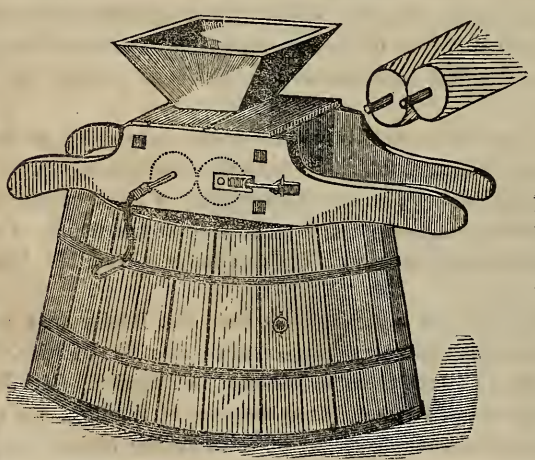
THE planting of vineyards being largely on the increase in California, and the manufacture of wines from the grape assuming an interest and importance hardly second to any other among our agricultural pursuits, whatever we can say as journalists upon the manufacture of wines as the experience of others, or as our own, if of practical value, we believe will be received by a majority of our readers with favor. On looking over one of our most valuable exchanges, the *Gardener's Monthly*, we find the following on the subject of grapes and wine making in the vicinity of Cincinnati, where for forty years the most persevering efforts have been continued in the rearing of vineyards, both of foreign and native varieties of grapes, and their manufacture into wine. We give the article entire as prefaced by the remarks of the editor. W.

"Feeling the importance of the Wine making interest to the community, we have engaged some of our Cincinnati friends to inform us as to the condition and improvements that are made, from time to time, in the head-quarters of Vine culture and Wine making. Messrs. Haseltine, Buchanan and Mottier, deserve the thanks of our readers for their kind responses to our inquiries. The first letter is from Mr. Haseltine. He says:

"'I have collected these few facts for your *Monthly*, from Mr. Buchanan, a very successful practical man, and favorably known to the country; also Mr. Mottier, who is a very enthusiastic cultivator, of thirty years' experience in America. Mr. Mottier's wine has taken several premiums and stands at the head of the list. He also has put in an acre of *Delaware Grapes*, and speaks of them in the highest praise.

You shall hear from him again on the Delaware, Herbemont and Cape. The drawings sent are from Mr. Buchanan's wine-cellar, by an artist from the office of the *Scientific Artizan*. The numerous casks are arranged on a rack for the purpose, at such a distance from the wall as that a person can pass entirely around, to see that all is tight and no leakage, or for repairs. The communications sent will explain the use of the different drawings. The vintage of 1859, within twenty miles of Cincinnati, Mr. Buchanan estimates at 2,000 acres, averaging 350 gallons per acre. This at $1 per gallon, nets an income of seven hundred thousand dollars; but much is sold at $1 50 per gallon by the barrel or keg, so that the product of the vine here may safely be estimated at between 8 and $900,000. The many thousand vines and cuttings sold in this city this Spring, attest the progress that is going on. Our association will be able to test fairly this fall the following wines produced here, viz.: Catawba, Herbemont, Isabella, Delaware, Cape, Norton's Virgin, and probably several others. So soon as we shall be able to suit the tastes of all in our own native wine, pure and good, then it will supplant whisky and brandy—nothing else can. Many see this in the wine districts of Europe, and my own observations there confirm this belief. I should perhaps say that our best vineyards produced from six to eight hundred gallons per acre last year. The vines now look well, and the promise of an abundant crop is very flattering. We think our vines have now outgrown the effects of the cold winter of '56, and that the crops will be more uniform hereafter. Besides the wine made here last year, an enormous amount of Grapes was shipped all over the country. I sold all mine in baskets, and disposed of many of my neighbors' in the same way. I hope we shall be able to get at the statistics this season, of what is doing in this way.

"'Three dollars per bushel was the market price. What can be more delicious than a plate of good ripe grapes for dessert, and as we may have them by the different varieties so long, it is another encouraging reason for all to plant. But I am writing too long an article, and will close for the present.



Respectfully yours,

S. W. HASELTINE,

Sec. Am. Wine Growers' Asso ciation.'"

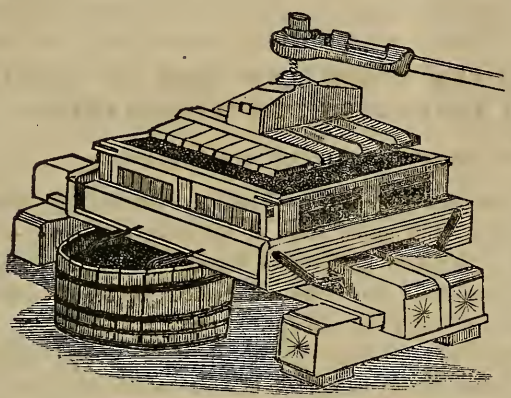
"The next article is from the pen of Mr. Mottier, whose reputation as a first class manufacturer, the reports of the Cincinnati Horticultural Society so fully attest:

"'To make good wine it is necessary to have a good cellar, clean casks, press, &c.

"First of all, have your

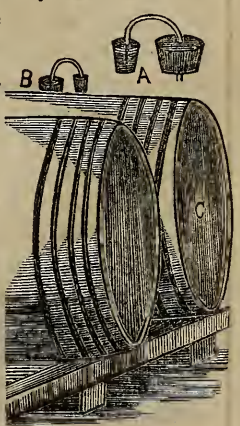
grapes well ripened,—gather in dry weather, and pick carefully all the unripe berries, and all the dried and damaged ones from each bunch; then mash or grind them with a mill, if you have a proper mill for it. The annexed drawing is of a kind much used here.

"'Be careful not to set your mill so close as to mash the seed up, or they would give a bad taste to the wine. If you wish to have wine of a rose color let the grapes remain in a large tub a few hours before pressing. The longer time you leave the grapes before pressing after they are mashed, the more color the wine will have.



"'For pressing the grape, any press will answer, provided it is kept clean and sweet, but the one represented by our engraving is the kind most used here.

"'After you have collected the must in a clean tub from the press, have it transferred into the cask in the cellar. Fill the cask within 10 inches of the bung, then place one end of a siphon (see *A.* and *B.*) made for that purpose, in the bung, and fixed air tight; the other end in a bucket containing cool water; the gas then passes off from the cask without the air coming in contact with the wine, which would destroy that fine grape flavor which makes our Catawba wine so celebrated. When properly made the must will undergo fermentation. Keep the end of the siphon that is in the water fully four inches deep, so as to exclude the air from the wine. When it has fermented, which will be in about fifteen days, fill the cask with the same kind of wine, and bung it loosely for one week, then make it tight; nothing more is needed till it is clear, which if all is right, will be in January or February next; then if perfectly clear, rack off in another clean cask, bung it up tightly until wanted. If the wine remain in the cask till Fall, about November it will improve by racking it again, and be sure to always have sweet clean casks. Do not burn too much brimstone in the cask. I have seen much wine injured by excessive use of brimstone, generally by new beginners. For my part I make little use of it. You can make different qualities of wine with the same grape, by separating the different run of the same pressing; the first run is the finest, if you want to make use of it the first season; but it will not keep long without losing its fine quality. To make good sound wine improve by age, the plan is to mix all up together. The very last run will make it rough, but will have better body and better flavor when two or three years old, and will improve for a number of years.



The first run will not be good after two or three years old. I have fully tested the different ways of making and keeping wine this last twenty-five years.

'Respectfully, JOHN E. MOTTIER.'"

"Mr. Buchanan's article in the main gives the same information as that detailed by the other two gentlemen—but the other items we shall insert in our next. The cut of his wine press, however, we give above, and are much obliged by his permission to have the drawing taken for us."

THE STATE OF THE GRAPE—WHEN AND HOW IT SHOULD BE GATHERED, AND APPARATUS FOR WINE-MAKING.

BY JOHN F. WEBER, OF WASHINGTON, DISTRICT OF COLUMBIA.

Signs when the grape is ripe, and may be gathered.—There are certain signs when the fruit has attained its perfection: the green stem of the cluster changes to a brown, woody color; the bunches begin to hang down heavily on the canes, the berries getting soft; a thin and transparent skin; the juice vinous, agreeable, sweet, thick, and adhesive; the seeds free of the pulp, and dry.

Disadvantage when the fruit is unripe, or dead-ripe.—In the first case, the formation of sugar is not developed; hence the predominance of acids in the wine, and its inferiority. In the second case, the necessary vinous acids are last to neutralize and give character to a syrup-like wine, not to take in account the great loss in quantity.

Gathering, sorting, and transporting the fruit to the press.—When it is determined to gather the vintage, sufficient help should be provided in order that enough may be collected every day to fill a large fermenting vat in the evening or night; sharp pruning knives or scissors should be used, to prevent jerking and dropping the berries. When a bunch is cut off it has to be examined, and all dry, green, and rotten berries picked out and thrown away, while unripe and other imperfect berries or bunches should either be allowed to remain on the vines, or sorted out and gathered by themselves. The bunches should be handled carefully, so as not to bruise them. Clean wooden pails are best to use, each hand being provided with one; and for transporting the grapes to the mill or press, a wooden tub, constructed in a cylinder form, but flat on two sides and a little wider on the top, with straps, so it can be carried on the back, and holding from two to three bushels, will be found very serviceable; or, if the distance to the press is considerable, a wagon with large tubs on it will be required, the tubs to have wooden covers. Clear, dry weather must be chosen for gathering the grapes, and the operation must not be begun in the morning till they are perfectly dry.

The quality of the wine will be much improved if the grapes are visited by a slight frost before they are cut off; particular pains must be taken to have everything used in gathering clean to the utmost; and no lunching or eating should be allowed near the vessels where the grapes are kept, as the smallest quantity of bread

or any eatable coming in contact with the grapes or juice will produce disastrous effect on the wine.

The wine-press and its apparatus.—In the vineyard culture, a good wine-press is most important. It is composed of a platform, frame and screws. The best seasoned white-oak should be used; the platform to be of four inches thickness, the frame of sufficient strength, and the screws either of wood or iron, but strong enough to answer the purpose. A large press with two screws is always preferable to a small one, as it performs the work more thoroughly, and a greater part or the whole of the vintage can be pressed at once, which is a consideration in making wine according to the principle that the quicker the operation of gathering, pressing and filling into the casks, the better its quality. The press should be near, or above the cellar, with all its apparatus, fermenting vats, etc., inclosed in a building erected chiefly for that purpose; and nothing else should be kept in the press-house. It should be substantially built, have good ventilation, and be capable of maintaining an even temperature, as this is very important while the must is in its fermenting process. Next to the press, an apparatus is required to mash the berries. This may consist either of a grape-mill with two iron rollers or cylinders, a deep, strong-built tub, in which they are crushed by a beater, or a pair of boots with double soles and without heels, long tops, and unblackened, to tread the berries on the press, or in a box with holes in the bottom to let the juice through, having hinges, hooks and staples on one side to open for the mash or trester to be let out. There are cases, also, when, it being desirable to exclude the stems, a strong wire sieve, with about an inch-wide masher, will be necessary.

The fermenting apparatus and casks.—The size of the fermenting vats should precisely correspond with the dimensions of the vineyard, in order to get the whole vintage into one or two. As the average yield from an acre of well-cultivated vineyard may be set down at four hundred gallons, the vats should be one-fifth larger, for the expansion of the must while in a fermenting state; by calculation and comparison it will be ascertained how large they should be. Well-seasoned, two-inch white oak planks should be chosen for the construction, and hoops one-third of an inch thick, of good soft iron, connected by a screw, that may be loosened or restricted according to the swelling of the wood. The proportion should be as three to four, or one-fourth higher than wide. When the vat is thus far constructed and set up, a false bottom is made, from well-seasoned white pine boards, and holes bored all over, for the purpose of putting it on the husks, to prevent their rising and coming in contact with the air. Its position must be regulated by two or three sticks, of two inches square, let through by means of a dozen holes in each, with one wooden pin underneath and one above the bottom; the sticks or joists to rest against the cover of the vat. It may be placed two feet or more under the surface of the must, and the pomace kept down that much.

A strong cover must likewise be constructed as a head for the vat. It is fastened on by means of grooves, like the heads in casks. This cover should fit well, so that all external air may be excluded, and screwed and pinned together in one piece.

When putting it in, the screw on the upper hoop is loosened to make it easy, and when the head is accommodated in the grooves the hoop is again screwed tight. To regulate the formation of carbonic acid gases and their outlet, and to prevent an explosion of the vat, a two-inch hole is bored through the head-piece, into which is fitted a tube-bung—a cylinder made of white tin. It may be constructed like a yoke-bow, rising with the shank fixed in the hole about eighteen inches, and the other end coming down within six inches of the cover, and terminating in a vessel of water.

Another hole, three inches wide, is made in the head, into which a bung is fitted, with a two-inch hole bored through; on the top of the bung is nailed a piece of sole leather on one side, on which a two-pound lead is placed, to hold it firmly and exclude the air; the leather at the same time acting as a safety-valve, in case the gas should develop very rapidly. As the vat should never be filled to the top, but about eighteen inches space left between the head and the must, another small hole is made through one of the staves, to show when the vat is filled to that point, which is then closed by a wooden pin or plug. Again, another hole is required, about the middle of the vat, to admit a small faucet, by which must may be let out to be examined. Finally, a hole is made close at the bottom, for a large faucet, to let off the young wine when it has finished its fermenting process.

There is still a better apparatus for examining the must while in its different stages of fermentation, and to indicate the quantity in the vat. It is a glass tube, or cylinder, about an inch thick, inserted near the bottom of the vat and forming a right angle, the other end running close along the vat to the top, and fastened to it by a staple; the capacity of the vat is indicated by marks on this tube, showing precisely how many gallons it contains, with the state of fermentation, and the changes of color in the must. When the color of the wine is a great object, this is one of the best contrivances to determine when the young wine should be drawn from the husks. For a small vintage, a large cask or pipe may be fixed up to answer the same purpose; the head with the faucet hole is taken out, a false bottom fitted in, a hole for a faucet bored near the bottom, and the other fixtures added.

The casks for receiving the young wine from the vats should be large, holding from one to two thousand gallons each, or the whole vintage; they should be made from the very best seasoned white oak, having strong iron hoops, with screws attached, a common two-inch bung-hole, and in one head a door, eighteen by twenty-four inches wide. The door is fastened on hinges, opening inside, and has two stout bolts and a cross-bar of oak outside, with two holes, through which the bolts are passed when the door is closed, being further fastened by two notches with wings. Another small hole is made in the middle of the head, in which a wooden faucet is inserted, for drawing out samples. The door is intended to admit a man for the purpose of washing and cleaning the cask.

As such large casks cannot be removed from the cellar, particular care is requisite to keep them clean and sweet, but they will last any length of time if made of good material. A cask for keeping wine should never be used for other purposes. As soon as it is empty it must be washed clean, inside and out, well sulphured, and the

bung driven in again. It should be kept in an airy, shady place till wanted for use; the press-house would be the most suitable.

A couple of pails are necessary for exclusive use in the cellar; they are generally made of oak, and in the form of a vase, having a narrow neck, but widening again at the top, which is made of copper or iron, the hoops and handle being composed of the same metal, and should hold exactly five gallons, being guaged to show by a mark each single gallon.

Funnels of different sizes are also wanted, the largest to be made of oak wood, holding about six gallons, with a copper or iron tube on the bottom, to go into the bung-hole of the casks, and two staves projecting three inches at the bottom, for two feet, to make it stand firm, a little declining towards the tube-hole.

Lastly, for drawing wine in or out of the casks a good siphon is required. This may be made of tin or lead pipe, but, for convenience, should have a small faucet soldered on as a mouth-piece. All these articles should be kept as clean as everything pertaining to the cellar and presses, and never used for any other purpose.

The cellar, how it should be constructed.—A good, well ventilated and drained cellar is absolutely demanded for wine-making. To secure an even temperature, it must be deep, and arched over with stone or brick, the stone work smoothed off with plaster and whitewashed; the floor either of flag-stones or brick; and to prevent the hot summer air getting in, and likewise the cold in winter, a separate entry for the steps is required, with a door at the top and another below. Several air channels or flues must be arranged from the arch to a couple of feet above the ground outside. The arch is covered with from four to six feet of earth. And this is now the most practical spot to build a house large enough to contain the press, a fermenting room, with conveniences for heating, connection by conduits with the cellar, and perhaps a separate room for distillery apparatus.

WINE-MAKING.

Making white wine.—To make a first class white wine, only white grapes are used; they are mashed in the apparatus, being fixed on the top of the fermenting vat, but not allowing the husks to fall into the vat, which, after being mashed, are put on the press, and when the whole mass is thus prepared, they are pressed out, and the juice or must, put in the vat. As there are no husks in the vat, the false bottom is not required. The head, or cover, is now put on, and the temperature of the must ascertained by the thermometer. If it is lower than fifty degrees, some must is taken out and heated, to warm up the whole mass till it comes up to sixty degrees, which is the point which it should be brought to when fermentation takes a proper course. This temperature must be maintained as evenly as possible, and therefore a proper room, as already described, with a stove or fire-place in it, will be the most serviceable. After the temperature of the must is regulated, the bung with the safety-valve and the tube are fixed on, and a small vessel with water is placed under the other end of the tube, or cylinder, so that it will reach into the water about three inches. The whole work of mashing, pressing, regulating the temperature, and

closing up the vat, must be performed with the greatest possible speed, as the juice begins to ferment as soon as it is extracted from the berries, and by coming in contact with the atmosphere, the most essential part of the wine, its chief strength, the alcohol, escapes. In proportion as the grape contains sugar, the fermentation of the must will proceed; hence the fermentation of the must from highly improved grapes of best qualities, containing much sugar, and a vintage favored with a hot, dry summer, will take twice as much time as poor and watery juice. By fermentation, the sugar of the grape-juice is converted into alcohol, which, amalgamated with the other contents of the grape-juice, forms the wine, at once fiery, aromatic, and pleasant in every respect. The dissolution of the greater part of the sugar, and a union with the acids gluten, tannin, etc., will have been performed when the must begins to get a clear color, an aromatic, vinous taste, and quiet; it is then time to draw it from the fermenting vat into the casks, in which it will slowly finish its fermenting process. Rich must will ferment in from five to eight days in the vat, while that of inferior quality gets through in two or three days. It is very important to have large casks in which to keep the wine, as thus its properties and character are much better preserved. When the casks have been filled, a similar tube is fixed, as on the fermenting vat, with one end in the bung-hole and the other in a small vessel of water.

Making schiller wine.—This name signifies a particular color of the wine, varying from one hue to another, and to be called neither white, yellow, nor red. Grapes of all colors are used in making this wine; they are mashed by putting the mill on the top of the vat, and the husks put in it, and fermented together with the must. When they are all mashed, or one vat is filled, the false or fermenting bottom is set in, to keep the husks under the must, and the head and other fixtures put on. The fermenting of schiller wine takes a longer time and is more stormy than white or claret wines; but this is stronger, more fiery and aromatic than either.

The same temperature is required as for other kinds. Much care, however, must be taken to watch its culminating point, when the carbonic acid gas escapes furiously, the water begins to roar in the little tub, and the safety valve works like a hammer, that nothing may interfere with the action and function of those agents, on which depends, in this critical period, the safety of the whole contents of the vat. The agitation may be observed still better in the glass tube connected with the vat; but after a short time, only a few hours, the must will calm, the fermentation proceed more quietly, and in two or three days begin to get clear and vinous, which is the time for drawing the young wine into the casks, there to complete its fermentation. The husks are pressed and the juice obtained added to the rest. As soon as one cask is filled, the tube is fixed into the bung-hole, and a small vessel of water put under the other end, to keep the air from contact with the young wine. The ventilation of the cellar is so regulated as to get an even temperature of about fifty degrees.

Making red wine, or claret.—The blue and Traminer-colored varieties are used for this purpose; after the whole vintage, white, Traminer, and blue, or black, is made into claret. The color of the juice has to be examined, if it be not of the

desired dark-red, some coloring matter must be used. There are several harmless substitutes, such as well-ripened elder berries, the berries of the hawthorn, etc. Whatever kind of berries may be used, they should in all cases be perfectly ripe; still better if they have been picked some time before they are wanted, and dried in the sun. The quantity of these must be ascertained by taking a sample of the must and adding berry juice till the desired color is obtained; but as the red or claret wines become lighter by age, the color should at first be a few shades darker.

Claret wine takes more time to finish its fermenting process than any other. It is perfected when the color becomes clear, and the taste changed from sweet to strong vinous. According to the state of the weather and the season, which influence the quality of the grape, the fermentation will proceed, but the ordinary period requisite to complete it is from eight to ten days. When finally fit to draw into the casks, the management is the same as with other varieties; the husks are put under the press, and the extracted juice into the casks and mixed with the juice first drawn. The sediment, or lees, from either variety, is saved in a cask for further use.

The husks, which contain a considerable amount of wine-making properties, after the juice has been extracted from them by the press, are broken up fine, put into the fermenting vat, and water, in equal proportion to its bulk, is added—to each ten gallons of water one gallon of lees—to strengthen and facilitate its fermentation. A light but pleasant wine is obtained in this way, which is fit to drink the next summer, and will be found in hot weather a very agreeable cooling drink. All the seeds should be saved, well dried, and hung up in bags in an airy, dry place.

TREATMENT OF THE YOUNG WINE.

The second fermentation.—The young wine, after it has been brought into the cellar, will go through another course of fermentation, and will be more or less agitated for a certain time. The casks have to be filled occasionally, and kept full to the bung; the dissolution of the sugar and of the different constituents of the wine will proceed slowly, and finally cease altogether; the undissolved matter settles on the bottom of the cask, and is called lees. When the wine gets to such a pitch, quiet and clean, it is time to draw it off into another cask. The casks, before using them, must be well cleaned and sulphured, which is done by dissolving sulphur in an iron pan over a fire, cutting strips of cotton cloth or linen two inches wide and nine long, and soaking them in the sulphur; then a piece of wire about a foot long is fastened to the bung, and the other end bent to a hook, on which is hung an ignited strip of the sulphured cotton, and introduced into the cask, the bung driven in, the cask rolled to and fro, and finally the sulphuric acid gas, which has not penetrated into the wood, let out by loosening the bung.

A siphon, reaching about two-thirds to the bottom of the cask, is used for drawing. If the empty cask can be placed near enough, so that the other end of the siphon reaches to its bung-hole, it is so much better, as there is less escape of the gaseous and flavoring ingredients of the wine. The rest of the wine which the siphon does not draw is drawn off by a faucet, about six inches above the bottom. When a cask is thus filled to the bung-hole, the bung is driven in tight.

In order to preserve the fine, clear condition of the wine, all jerking and other rough treatment of the casks must be avoided. The lees from the emptied casks are collected into a cask by itself.

White wines will have attained the proper condition for drawing in a couple of months, wine of inferior quality will sooner, and should be drawn immediately after showing a clear, bright color, as the sediment injures its taste and character.

Schiller wine, according to its quality and intended use, may remain some time on the lees, especially if it is designed for preserving to an old age; but in most instances it will improve by drawing as soon as it is clear.

Claret wine, however, should remain from five to six months in the first casks and lees. When fermentation is no longer perceptible, the cask is filled, the bung driven in, and it is left undisturbed till the drawing is finished. The exact period is a matter of fashion, according to the taste and habit predominating in the country where it is sold. By letting it stand on the lees for several months it obtains more of those peculiar principles, astringency, etc., preferred in a good claret.

No wine should be drawn, and no good wine-cooper will open a cask in cloudy or sulky weather, as the wine, coming in contact with such an atmosphere, gets turbid and excited; therefore cool and bright days must be chosen for that purpose. All articles used in the drawing, no matter how clean they may be kept, should be previously rinsed with wine.

Remedies for flat and turbid wines.—There are many instances when the wine loses its character, either turning flat, or getting excited or turbid, when it will be necessary to attend at once to its restoration by applying proper remedies, and prevent it from total destruction. By acting according to the principles set down here, such cases can occur only by accident; but, to avoid the calamity, constant care is required. The causes may be different, but generally it will be found that neglect, merely, or perhaps ignorance of proper management, created the trouble.

When wine becomes flat, it wants stimulating. This may be done by various means. The liquid from two pounds of raisins, cut fine, and soaked a few days in a gallon of good rectified alcohol, then pressed and strained, is mixed with a couple of gallons of the flat wine, heated to near boiling, and all put into the cask again. After it has been well stirred, the bung is replaced and left undisturbed for at least two months, when it may be drawn into another cask, previously well-sulphured. Every thirty gallons will require a gallon of alcohol and two pounds of raisins.

Another good remedy is, from each thirty gallons of flat wine two gallons are taken out, two pounds of well-dried grape seed added, and brought over fire; while it is heating the seed are stirred and rubbed with a beater, and after a while the liquid is strained and put hot into the cask again, which is bunged up immediately. Practical knowledge and experience are necessary to manage such wines; but the cause of the trouble may easily be prevented by adhering to the general principles of wine-making.

If the cask produced the flatness, the wine must be drawn first into another, before anything is done with it. When the wine becomes excited, turbid, and ferments

again, which may occur often in poor cellars, if the weather should change from cold to warm, or if the casks have been opened in close, sulky, and cloudy weather, the difficulty will be found most likely in the cellar. Wine cannot be expected to keep and mature well in a poor cellar, which, perhaps, is also used for other purposes.

Sulphur is a good remedy. An empty, clean cask is provided, two gallons of the infected wine put in, a strip of sulphured cotton ignited, the bung driven in, and the cask rolled. After a while, two gallons more of wine are put in, sulphured, and rolled again, according to the quantity to be cured; eight or ten gallons may be impregnated with sulphur, or even more; and finally restored to its stand, and well stirred, with the bung out.

Further treatment of the wine, and its fining.—After the wine has been drawn once, there is still more or less undissolved matter in it, which will soon settle to the bottom of the cask and therefore render necessary another drawing. This must be done generally three or four times before the wine gets clear, well-fined, and fit for the market. The proper time for drawing will be at intervals of from three to five months; but experience and judgment alone can point out the exact period. If it is desired to sell the wine before it has attained its finish, it must be fined. This is done by taking out of the cask from four to five gallons, and adding to each thirty gallons the whites of ten eggs; these are beated to foam with the wine, finally put into the cask, well stirred, and the cask bunged up.

Or powdered gum arabic may be used, in the proportion of one ounce to fifty gallons of wine, well stirred with the whole contents. Both articles are perfectly harmless to the character of the wine, and entirely answer the purpose. In the course of from four to six days the wine will be in the desired condition to draw and bottle for market. It will keep best and improve more in the casks; but there are several instances when, after it has been drawn, and the casks filled, portions remain, for which no casks small enough can be provided; it is better to draw such portions at once into bottles. Simple as the bottling seems to be, yet there are many things to be observed, in order to keep the wine well and prevent it from becoming flat and turbid. The first and chief requirements are clean, sweet bottles, and new, fresh corks; it must be a rule strictly adhered to, that as soon as a bottle is emptied it is to be rinsed out well with water and placed in the open air, on a shelf or frame erected for the purpose; before using, it is rinsed out once more, and then filled within two inches of the mouth. The cork, which should fit exactly, is dipped into wine, and driven well in. The bottles should always be placed in a horizontal position, so that the corks cannot dry and admit air, which is generally the reason why the wine gets flat. They keep best if put in dry sand, one above the other. As a further protection, the corks may be waxed.

USE OF THE HUSKS, LEES, AND SEEDS.

Use of the husks.—These may be differently used; a pleasant wine can be made of them, in the way already described, but a real good marketable wine is obtained by adding sugar in proportion to the vinous principles, found out by proper instru-

ments by which all wines have to be brought up to a certain standard point, most favorable to their development. But, as a description of this modern art of wine-making would require more room than has been allowed, it may only be mentioned that a vintage can be increased from a hundred to two hundred per cent. without the least detriment to its quality. [See August No. of CULTURIST.]

If the husks are not wanted for this purpose, a good vinegar may be obtained from them. As soon as they come from the press they are broken up fine, and put into a vinegar vat; twice their bulk of rain water added, with two gallons of lees and a quart of beer-yeast to each barrel. The vat is set in a warm room, *but not in a fermenting room, cellar, or anywhere near wine*, and allowed to stand till the vinegar is formed, which is then drawn into barrels, the husks being brought to the compost heap, or directly to the vineyard.

Use of the lees.—The lees contain considerable undissolved sugar and other vinous substances, which, by distilling, make a highly flavored brandy. The quantity may be increased without affecting its good quality by adding to each barrel of lees half a barrel of well-rectified alcohol; that from potatoes is the best. Let it stand a couple of weeks, turning the cask once or twice a day, and finally it will be fit for the still. The remainder in the still, too weak for brandy, makes a good vinegar. Lees are likewise a good stimulant for flat, insipid wine, and a portion should always be kept on hand to be thus applied.

Use of the Seeds.—Grape seeds are very valuable for fining and strengthening the wine; they may be used either in the manner mentioned, or a few handsfull thrown into the cask just as they are. They must be well dried, and kept hung up in an airy place.—*Patent Office Report*, 1859.

HOW THEY MAKE PORT WINE.

A CORRESPONDENT of *All the Year Round*, who "happened to be in Oporto during the last vintage season," thus describes the process:

"The first care of the wine farmer, when his harvest-time approaches, is to engage men and women enough for the vintage work. The laborers engaged are almost savages, wild in their tempers, dirty in their persons, and each male of them, man or boy, goes armed, after the custom of the province, with an ugly gun slung to his back. The day's food of these poor people is a little matter. They will think themselves very well off if they can get a couple of dried sardines for dinner, as a relish to their bit of Indian corn bread. The duty of the women in the vineyard is to cut the bunches into large baskets, which the men carry upon their shoulders to the press. There is a great deal of singing on the ground, and all seem to work very contentedly, in spite of the great heat. When darkness ends the labor of the day, the laborers all meet outside the farm-house, a guitar is produced, and dancing is kept up for some hours.

When all the grapes are in the wine-press, the first thing to be done is to drag them well over with wooden rakes, to separate some of the stalks. Then all the

men tuck up their trousers, and jump in. At my friend's farm, a tub of water was ostentatiously set by the side of the press. I suspect, however, that this was a concession to the prejudice of visitors, for it did not go to the extent of actual ablution. Nobody used the tub of water, all seeming to have a supreme contempt for cleanliness. The scene inside the press is very animated. Twenty or thirty brown-faced and black-bearded tatterdemalions, up to their knees in the purple juice, smoke, sing, quarrel, dance, and scream, half mad with excitement, for to them this is the crowning event of the year. Every now and then a cry is raised for brandy, which the farmer furnishes. It is the pure white spirit as it runs from the still, and very strong. As it begins to take effect, the singing becomes louder, and the dancing, which within the press, is the desired work, fast and furious. A general fight often ensues, in which the long guns sometimes play their part. When all the juice is trodden from the grapes, a plug is drawn. The must runs through into a smaller tank, whence it is carried in buckets to the tuns, containing four or five pipes each, there to ferment.

The wine-press is then half filled with water, the husks are again trodden, and finally squeezed under a press of wood. The liquor thus obtained ferments into what is termed agua pé, a liquor that will be drunk by the laborers when they come, a month later, to prune the vines.

When the fermentation of the wine in the tun is complete, the result would not suit English palates; being thin, and tart, and rough. It has, therefore, to be sweetened and fortified. For sweetening, geropiga is used. This is made by adding brandy to a part of the fresh must, which is thus prevented from fermenting, and retains, therefore, the sugar of the grape. Brandy is used to strengthen the wine. Often there is a deficiency of color, and this defect is cured with dried elderberries, tied in a sack, put into a tub about half full of water. Into the tub a man gets, and by treading on the sack, soon draws the color from the berries, and the darkened liquor is added to the wine. This practice is common all over the wine country, and favorable spots are chosen for plantations of elder-bushes, solely to supply the demand for berries.

RECLAMATION OF TULE LANDS.

IN a country where there are no rains for six months of the year, the annual production of bread crops becomes a matter of growing public anxiety, as there is seen an increasing population to become subject to the perils of famine. California being subject to such vicissitudes, her people should see whether they cannot develop some of her untouched resources, so as to provide against the accidents of seasons.

Within the boundaries of the coast range of mountains on the west, and the lofty chain of the Sierra Nevada on the east, there lies enclosed the great basin of the Sacramento and San Joaquin valleys. It was the bed of a former inland sea, which most likely had no outlet to the ocean until a disruption took place, caused by volcanic action, forming what is now known as the Golden Gate. If we glance back to the primeval period, we shall find this sea a profound of fathomless depths, with

walls of granitic mountains, towering aloft in perpendicular front, far above the ethereal mists. The changes of the seasons produced atmospheric action, softening the sharp angles of the topmost peaks, and the loosened atoms, obeying the laws of gravitation, came down from the dizzy heights, grinding themselves into impalpable dust, and plowing deep furrows in the mountain's bosom, which afterwards became ravines and chasms, where flowed afterwards rills and rivers. Thus has been produced the material which has formed our foot-hills, undulating plains, and the constantly overlying strata which will make the sea as dry land.

This formation is of two distinct characteristics—alluvium and sedimentary. The alluvium is composed of the grosser bodies of earthy substances which are drifted along by the force of a current of water; sometimes temporarily deposited by an eddy, causing the stream to change its course, thus forming plateaus and ridges. The sedimentary is that form of earthy or vegetable matter, dissolved and held in solution by the water, until reaching a place where it is entirely motionless, when it forms a precipitation, more rapid when mingling with some other stream whose waters are charged with counteracting alkalies. This latter is the material which now is constantly raising our tule lands above the annual overflow; and in any extensive arrangements for the reclamation of these lands, it will be necessary to see in what manner we may be able most rapidly to add alluvial or sedimentary deposits to the lands sought to be brought under the dominion of successful husbandry. The mount embankments are made so as to keep off the annual flood, the sedimentary deposits cease, and then there will be no addition except from the accretion of vegetable mould from the decaying crops grown upon the soil.

There may be said to be three distinct classes of tule lands, each of which is susceptible of different treatment for their most successful reclamation; and they may be classed as those lying in the vicinity of the mouths of the Sacramento and San Joaquin rivers, and those on the east and west banks of those rivers respectively. The tule lands in the district where these rivers disgorge into the bay, are subject to tidal overflows, and the annual floods have no great effect upon them. To reclaim these lands would require embankments to entirely surround each distinct parcel, they being mostly islands, or having on one side the rolling hills of Montezuma, or the Mount Diablo. The earth to form the embankments should be taken from the inside, so as to leave a ditch, which answers the purpose of a drain. The embankment should be sufficiently high so as to avoid any danger from extraordinary high water, and should have its face inside, with a gentle slope towards the river. Sluice-boxes, with a tide-gate, should run under the embankment from the bottom of the ditch, so that at low tide all of the water may be carried out of the ditch. Cross drains, connecting with the main ones, can be opened whenever needed; and alfalfa should be sowed on all of the embankments, which will soon form a turf of sufficient consistency to prevent them from washing.

The lands above described have but little tule; they are covered with a dense growth of coarse wild grass, which is easily subdued by turning up a light furrow with a sharp steel plow, which exposes the roots to the sun, and they soon perish.

After the land has been drained in the manner suggested, it can be broken up either in the winter or summer. If in the summer, which will most effectually kill the wild grasses, it should be mowed first, or if practicable, rolled down and plowed under. A crop of wild oats should follow, as nothing so effectually subdues cold, coarse soils as thickly sown oats.

The second division of the tule lands are those west of the Sacramento river. These are covered in the winter and spring from the waters of Putah, Cache, and other creeks coming in from the coast range on the west side of the valley. Formerly the Sacramento river contributed to the result, but farms being opened all along its banks, the small sloughs, which at high water discharged a portion of the surplus into the tule, have been closed up, so that none of its waters now go upon the tule, as is evident from the clear condition of the water in the tule, the Sacramento river being highly discolored the entire year from the effects of mining. Cache and Putah creeks both sink before reaching the tule, and it is only for a few days after the heavy rains that they have a sufficient volume of water to flood the tule; and to prevent this, two plans are suggested: to cut a channel from where they sink to the Sacramento river, a distance of four miles each; or to dig a canal through the center or lowest part, commencing at Cache slough, which empties into the Sacramento near Rio Vista, carrying this canal up to Cache creek, a distance, by the meanderings of the river and tule, of some fifty miles. A canal six feet deep and twenty feet wide, with the earth thrown out on each side for an embankment, would be ample to carry off the waters of Cache and Putah creeks, except for a few days, when they might be charged with an excess, occasioned by an unusual fall of rain, which might cause the tule to overflow for a short time, but which would soon be drained off by the canal. It is noticeable that the water in the tule sets with a slow current in the direction indicated, proving that there is sufficient slope in the land for all practical purposes, there being the same perceptible height above high tide at Rio Vista as at any point above, during high tide, at the lowest stage of the river in the summer. A ditch or canal opened through the tule as indicated, would most effectually drain these lands, as the water would be collected into a narrow compass, and would discharge with great velocity in consequence. Nor would the cost be an objectionable item, when the amount and value of the land reclaimed is considered. Floating steam dredges, to follow in the channel made, would do the work expeditiously. There would be required about five hundred and fifty thousand cubic yards of excavation, which could be made for twenty cents per yard, or one hundred and ten thousand dollars, to reclaim about one hundred thousand acres, or one dollar and ten cents per acre. This land thus reclaimed, would readily sell for fifty dollars per acre.

The third division of the tule lands are those on the eastern sides of the rivers. These lands receive an annual deposit of *slum*, brought down by the rivers, which pour in upon them the sedimentary earths set loose from a thousand hill-sides in the mining districts, and are in a rapid transition from muck-beds to alluvial bottoms. Nature, in her good time, must perform the work of reclaiming most of the tule lands near the great rivers which have their sources among perpetual snows, as the

volume of water coming down will be so great, and so far protracted into the summer, that it will be expensive and difficult to provide artificial channels to carry the surplus into the bay; consequently, there may be expected annual overflows of so long a period that the season for cultivation of the lands subject to it will be entirely too short for agricultural operations, attended with successful results.

On such lands will probably be our future great hay-farms, and attention should at once be turned to sowing upon them improved kinds of cultivated grasses, which readily spring up in the earth just deposited by an overflow; and for this use, two kinds of grasses, red-top and blue-joint, are especially adapted, as each, aided by the sedimentary deposit, rapidly supplants the tule. F.

SORGHUM SIRUP MANUFACTURE.

WE are in receipt of two communications, asking information of the "best process" of extracting the juice from Chinese sugar-cane, and "best mode" of concentrating the same to sirup or sugar. We have, in a previous number, remarked, that there are mills of various patterns in this city—San Francisco—for crushing the cane; that they are of iron, cost varying with size and efficiency. We can only recommend, as likely to insure the "best process," the use of the best machines. We have never used either of the several patterns, nor seen them used, and do not know which is the best. Our correspondent R. S., now that he has an excellent growth of cane, seems to have misgivings as to his ability to successfully extract the juice, and convert the same into sugar. With any mill competent to crush the cane, the juice is obtained in quantity—as regards all the cane contains—just proportionate to the real efficiency of the mill. That it can be expressed readily, and converted into sirup of real excellence, by a proper apparatus and process, we are certain; but we are not entirely conversant with the minutiæ of doing it. In proof of our first assertion, we copy from the *Wisconsin Farmer* the report of the committee at the Wisconsin State Fair of 1859.

"The committee upon the manufacture of "Sugar and Sirup upon the fair grounds," found upon their book two entries for competition, for the "best manufacturing apparatus, complete, upon the fair grounds, for sugar and sirup making, comprising grinding and boiling fixtures;" the one by Messrs. Spears & Plumb, of Madison, and the other by L. L. Lee & Son, of Milwaukee.

"Owing to the imperfect fitting up of the apparatus, the parties were not prepared to work before the committee until the afternoon of Thursday. At that time we weighed out to each of the parties seventy-seven and a half pounds of Imphee canes, for grinding. The mills were operated by one horse each.

"Messrs. Spears & Plumb ground out their quantity in twenty-eight and a half revolutions of the horse; and Lee in thirty and a half revolutions. The time of each was six and a quarter minutes. Spears & Plumb extracted thirty-eight and a quarter pounds of juice, and Mr. Lee forty-six and three-quarter pounds. The first

lost considerable by fast feeding and an overflow of juice from the channel of the mill.

"The whole of the juice was delivered to Spears & Plumb for evaporation upon "Cook's portable sugar evaporator." They had at least three gallons of boiling water upon the evaporator when the juice was put upon it. In fifty-five minutes began to draw finished sirup from the evaporator, and in sixty-four minutes the whole of the juice delivered; and fifty pounds in addition was reduced to a golden sirup, and the evaporator left full of water, which had been introduced to drive the sirup from the evaporator. There was no burnt matter on the evaporator.

"On Friday morning the committee weighed to the competitors seventy-nine pounds of very unripe Sorghum canes. Messrs. Spears & Plumb ground out their quantity in forty-five and a half revolutions of the horse, occupying ten and a half minutes time; and Lee & Son in thirty revolutions of the horse, occupying seven and a half minutes time. The draft of Messrs. Spears & Plumb's mill was, both trials, to the draft of Mr. Lee's as two is to three, at least.

"Messrs. Spears & Plumb extracted forty-one and a half pounds of juice, and Mr. Lee forty-eight pounds. The first labored under the same difficulty as yesterday, of the expressed juice overflowing from the channel of the mill and wasting.

"The juice was delivered to Mr. Lee for evaporation upon "Hedge's evaporating pans," and raised to a boiling point upon a pan over the fire, and immediately burnt, and spoiled, when the operator abandoned it.

"From the same kind of canes, about a hundred pounds of juice was extracted, partly by Messrs. Lee, and partly by Messrs. Spears & Plumb, and boiled upon their (Cook's) evaporator, and a very fine article of sirup made from it. There was no burning in the pan, nor unpleasant flavor to the sirup, though it was darker than the sirup made on Thursday, by the same parties. The committee are unanimous in the opinion that Cook's evaporator is the best article which has ever been presented to the farmer for the evaporation of sugar.

"The committee have awarded the first premium to Messrs. Spears & Plumb, for the best complete apparatus.

"The committee are well aware that good work has been done with Hedge's boiling pans, though this time the persons operating them have failed; but by reason of the efficiency of their mill, we have concluded to award to them the Society's second premium.

"All of which is respectfully submitted, &c. J. G. KNAPP, Chairman."

SUGAR CANE MANUFACTURE.

Extract from J. C. Plumb's communication on sugar cane culture and manufacture, in Wisconsin Agricultural Transactions, 1859.

"This manufacture is necessarily a process requiring *good machinery, much energy,* and *constant care,* for a failure in any one of the different operations will defeat the object in view.

"In regard to the mill for expressing the juice, we will only say that it should be

immensely strong, with the least possible gearing, and always with a graduated, self-regulating pressure upon one of the rollers, and with sufficient power to *remove all the juice;* it should also be free from the constant leakage and the liability to clog, which characterizes some now in use.

"I think that mills of greater strength than those now in common use will be demanded as soon as the business becomes more settled, especially for working cane partly frozen.

"The juice should pass immediately from the mill to the evaporator, and be filtered in the passage.

"We have used a coarse woolen bag, of about two pails capacity, attached to the receiving tank, with an alternate to take its place while shaking out the deposit which will cling to it every hour. Some recommend a gravel filter, which we have never tried, but something is necessary; even the receiving tub filled with straw will do temporarily.

"The juice should not be exposed more than twenty minutes before heating to the boiling point; and now comes the climax of all the process—the reduction to sirup—and without that simple combination of furnace, boiler, and cleanser, in the adjustable rocking machine called "Cook's Evaporator," or some equivalent, we could not have patience to engage in the business at all. But this is so *simple*, *economical*, *portable*, and *effective*, that it is a pleasure to run it; and instead of its being the burning, sooty, dripping, daubing operation of the old way, the operation is cleanly, pleasantly, and quickly performed, as your committee do report.

"We have operated this evaporator in different portions of the State, and it has given surprising satisfaction where exhibited. Its construction is upon a new principle, which secures a constant flow of the juice, from the time it enters until it passes off sirup. It also retains the scum and feculent matter at the end of the several channels, from which it can be removed every half hour, and performs the cleansing process better than by introducing alkalies and other foreign ingredients. Our limits will not admit of a minute statement of our experience and observation on this branch of productive industry."

COOK'S EVAPORATOR—TESTIMONY OF A MAN WHO HAS TRIED IT IN WISCONSIN.

"Knowing that Mr. Clark, of Albion, Dane county," says the *Wisconsin Farmer*, "had bought and used one of the above evaporators last year, although a stranger to us, we dropped him a line to learn his opinion of it; presuming that the experience of a well-known and good Wisconsin farmer would be more satisfactory to many who are inquiring of us in relation to it, than anything we could say on the subject. His reply is as follows:

"D. J. POWERS, ESQ.—*Dear Sir:*—It is with pleasure that I express my opinion of Cook's Evaporator from my limited experience. The one that I used last season worked far beyond my expectations, and if I could not get another, I would not take double what it cost me, judging from what I know of it, and I consider that I know but a small part of its real worth. When I started my machine all I knew about using it was, that I poured in the juice at one end, and the sirup would run out at

the other—being destitute of proper directions. But I soon found it to be a fact, that juice *would* run in, and sirup out, at the same time, and that, too, at a smart rate, providing you kept the fire agoing. I could boil four gallons an hour without any trouble. I did not make any sugar, from the fact that I was unacquainted with the nature of the cane, and relied upon the judgment of others, which was, that freezing did not hurt it. I had one acre of cane of my own, which I intended to try to make into sugar, as it had arrived nearly to maturity before the frost injured it, and was an extra crop for the season. But with the impression already stated, I let it freeze, but found that by so doing it lost its granulating properties, and made inferior sirup.

I think that from well matured cane, sugar can be made of extra quality. The sirup I made of cane before it froze is as white as any honey I ever saw; and cake made of it resembles that made of refined sugar in appearance, and its flavor is fully as pleasant, according to my taste. What I made of good cane, before it froze, was not boiled thick enough to granulate. I made a little less than seven hundred gallons, and could have made double the amount in the same time, if I had had a suitable machine for squeezing the cane. The one I had to depend upon was a wooden one of my own construction. I obtained an iron one, manufactured at Whitewater; it would grind fast enough, but it would not squeeze out the juice; I threw it one side. I intend to get a good crusher this season, and then see what I can do.

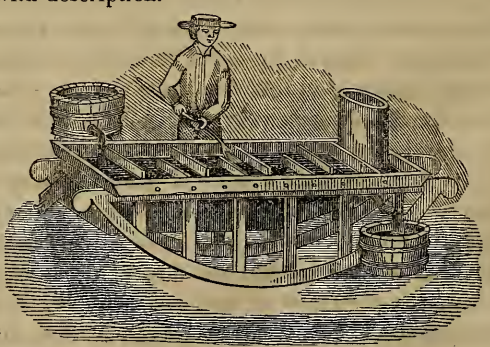
"These hasty and broken sentences express my candid opinion; and any information that I can hereafter favor you with, I shall give with great pleasure.

"Yours truly,

"ALBION, DANE CO., WIS., June 17, 1860. J. J. CLARK."

Our correspondent "M." asks our opinion of the best form of kettles for boiling the juice, and whether a large and deep iron boiler, such as he has, will answer. Our reply is, his kettle will doubtless answer, but there are several inventions much better adapted. In the foregoing articles mention is made of Cook's Evaporator, as an efficient article for the purpose; and though we gave on page 133, of vol. 2, an engraving representing this invention, we are inclined to accommodate our correspondent by inserting it again here, with description.

The main features of its structure are, a shallow pan some three inches deep, with parting ridges about six inches apart, requiring the sap in passing from end to end over it, to travel right and left around the edges. The pan is slightly inclined upon the rockers; the sap is fed on at the upper or highest end, while there is a good fire in the furnace beneath; in its zig-zag course to the



rear or lower end, it passes over the fire in a thin sheet, and consequently the watery portion of the sap rapidly evaporates; so that by the time it reaches the other end of the pan, it is reduced to sirup, and runs in a continual stream into the receiving tub. The sap, as it passes around the ends of the dividing ridges, travels over a portion of the pan outside the furnace underneath, and consequently partially cools; here the scum rises, and is taken off from section to section, so that it is well cleansed when over the course. Such, in brief, is the structure and theory of its working. Parties certify to making from forty to sixty gallons of sirup with it per day. The pan, furnace, and whole thing is so light that two men can readily remove it from place to place by taking hold of the handles at the end.

To make sugar from the sirup requires a different process, and cannot be performed with the evaporator. The process is the same as with maple or other sirups. Deep kettles are used; a quantity of sirup is slowly evaporated to a consistency that when cold and at rest, the sugar crystallizes, when the molasses is drawn off, leaving the sugar ready for the refining process, if white or loaf sugar is desired. For common brown sugar, the process of evaporation is carried further, with constant stirring, till all the moisture or sirup is reduced to sugar. In this last process the greatest care is requisite to prevent the contents of the kettle from burning. A reasonable practice will enable any skillful operator to turn off a very fair article of sugar.

W.

A RUN AMONG THE MOUNTAINS.

TURNING off a little to the left of Jackson, Amador County, the road winds up along a ridge which commands an extensive view, before descending into the basin which encloses the town of Volcano. At one point the spectacle presented to the eye is grand beyond description. Before you at no great distance the snow-crowned summits of the Sierra Nevada tower into the ethereal blue, while just at their icy feet dense dark forests mantle with deep emerald the retreating hills, becoming rugged and gray as they approach the mining region. Stopping for a few moments on one of the divides to rest our horses, we could look down into a fearful chasm, where miners were delving for the precious ore, dwarfed to mere specks; then farther along to the south, Mokelumne Hill, Jackson, and a number of smaller villages, glistened in the rays of the mid-day solstice; while no great way off in the west, the San Joaquin valley expanded as a sea, its yellow harvest simmering with the electric wavy undulations of midsummer heat.

There were a large number of quartz mills in this vicinity, which to some extent accounted for the wholesale destruction of the timber, much being required for shoreing up the tunnels, as well as to run the steam engines to work the stamps. Another mode of wasting the timber has been in its inconsiderate use in making fences, as a great deal of land has been fenced for farming and grazing purposes. The practice has prevailed over large districts to cut down trees and roll them into

the fence range; in this way an excess of wood is used; and such fences soon decay, or are burnt by the fires set by accident or on purpose. It is a matter of surprise that no more stone wall is made in the mountain districts, as there are many places where it could be laid into fence cheaper than brush or board fences can be made. Rapidly the old growth of timber is disappearing, and there is a young growth springing up everywhere to take its place; and these young forests are much more dense than the old, and being aided by the irrigation of ditches running over most of the ridges, they will grow up with astonishing rapidity.

Volcano is a town of large local trade, being in the centre of a rich mining district. It was almost entirely burned down one year since, but is being rapidly rebuilt, and with many substantial fire-proof buildings. The deep cut flume which drains the flat around the town adds greatly to the success of mining. The nature of the claims here are mostly gravel, which is formed in drifts between large limestone boulders, extending downwards—the bottom of which has not yet been ascertained. We judged that most of the mining here was being done by Italian companies. This town has many tasteful cottages, surrounded by a profusion of fruits and ornamental shrubbery.

Our road to Placerville led over a succession of ridges, which kept us going up hill and down ravine. Fine mountain farms were seen along the route. Fiddletown was in our way, and nothing can be said of this place except that it seems to have seen its flush days. We noticed that about the meanest building in the place was used for a school house; but it was filled to overflowing with bright rosy children. After leaving Fiddletown we entered a narrow valley running north and south, which led nearly to El Dorado. From the latter place to Diamond Springs there is a fine turnpike road, it being on the overland route to Carson Valley. Both El Dorado and Diamond Springs are flourishing villages, with highly ornamented gardens.

Coon Hollow hill is passed just as we rise upon the ridge, which commands a view of Placerville. Coon hollow has been a famous mining locality, and has produced an immense amount of gold—but at this time seemed to be somewhat deserted.

From the crest of the ridge we got a bird's eye view of Placerville, which was grand in the extreme. The town winds along the serpentine course of a small stream for about two miles, and is quite compactly built with a great many substantial buildings, while off of the main street there are little vallies, with cottages nestled away among rich shrubbery; then the many cone-like hills are mostly gemmed with rural homes, and everywhere about the place is felt the commanding influence of virtuous women. The mines about Placerville are yet remunerative; but the prevailing feature of the place, is its immediate connection with the developments of Washoe. People here speak of going to Carson Valley as of no more moment than to Sacramento; and it is an instructive feature of our civilization to see men with their wives and little ones leaving in the stage for "the Valley," thus sending back from the Pacific a colonization which is destined to meet our eastern brethren at the Rocky Mountains.

Coloma next was in our route; and this latter place presents in a more marked

degree the contrast between the condition of things at the time of the gold discovery and the present day. Twelve years have nearly elapsed since the discovery of gold at this place startled the civilized and semi-barbarian world, and the auriferous stream first started from this historical ground, in a feeble ripple, has become a great torrent, setting out from the golden gates of California, until it counts its annual hundred million, entirely changing the financial avenues of commercial nations. From having been foremost in the gold producing, Coloma seems to have adopted the wise maxim that all is not gold that glitters, and this exciting and precarious employment has in a great measure ceased, and her people are devoting themselves to the more certain enterprise of cultivating the soil. Many of the old mining claims have been filled up with tailings from sluices and are now covered with fine garden orchards, while the hill sides surrounding the town are terraced with vineyards. The soil is a deep loose granite formation, and all kinds of trees and vines flourish remarkably. Here are some of the earliest planted orchards in the state, and it is worth a visit from a distance to see their burdens of luscious fruits.

From Coloma to Georgetown the road is hilly but quite smooth. The latter place is on the brow of a hill, which commands an extensive view. The main street is wide, and there seemed a general thrift pervading its community. The honey bee was found here doing remarkably well, and there were numerous evidences that garden and orchard culture were receiving increased attention, with favorable results. From Georgetown we descended towards Auburn over smooth heavy timbered ridges, until we struck the mining localities low down, where the usual waste of forest trees was noticeable again. Fine farms were interspersed along this route, many of them having a comfortable and home-like appearance.

Auburn is a thriving town, and is in advance of almost any other mining place in the beauty of its family residences and the extent of its orchard and vineyard enterprises. One party here planted the past winter upwards of thirty thousand vines, which were succeeding well.

Descending from Auburn we were soon at Rattlesnake Bar, an old mining locality, which yet pays well. Near this place are two objects of attraction, Alabaster Cave and Miller's garden—the latter being a specimen of model cultivation. The Cave we will endeavor to describe in a future number. Ophirville, Gold Hill, and Doty's Ravine, were passed successively, all giving evidence of industrial progress.

Passing onward from Auburn, farms and gardens meet the eye almost everewhere towards Grass Valley, and as we wound our way over the bare hills, not long since covered with heavy timber near that place, we were astonished at the extent of the town, and the large number of quartz mills in active operation in every direction. Gardens, orchards, and vineyards here, as elsewhere, break the utter desolate appearance which the mining districts would wear were it not for their grateful emerald hues. One could get but a faint idea of the number of persons employed in mining at Grass Valley, did they not see the throngs of sturdy men going in the morning and returning in the evening from numberless shafts and tunnels, where they had wrought by the candle's glare hundreds of feet below the flaming sunshine.

Nevada, northward from Grass Valley, gives evidence of great prosperity, as there are many substantial fire-proof buildings in her compact streets, while the hills surrounding are being covered with fine houses. Nevada, like Placerville, is considerably affected with the Washoe hegira, and is a rival of no mean proportions in aggregate of business and population.

A finely graded road, winding among well timbered hills, led us to San Juan. This is a place of rapidly growing importance, and is the centre of some of the most extensive hydraulic mining enterprises in the state, the ground being a deep gravel, which pays from the surface to the bed rock, and so situated that the gravel can be sluiced into the Middle Yuba without choking the claims. The town has a newness and thrift, indicating a well grounded confidence on the part of its citizens in a prosperous future. From San Juan to Marysville the road winds around abrupt hills and descends rapidly to French Corrall, which is on the increase.

There is probably more earth being sluiced into the Yuba than any other mining river, as the heavy mining is to a great extent hydraulic washing, a species of labor by which one man with a pipe, with a sufficient head of water, can dissolve more earth in a day than fifty with pick and spade. This accounts for the rapid manner in which the bed of the Yuba is filling up from the foot-hills to its confluence with the Feather. A glance at what the Yuba river is doing in the way of filling up the channels, so as to stop the navigation of our rivers in the Sacramento and San Joaquin valleys, will satisfy any one that with many other rivers pouring in a proportionate amount of sediment, the time is rapidly approaching when they will cease to be navigable.

Marysville is a city of substantial growth, with some of the best buildings in the state; but, like Sacramento and Stockton, is growing slowly. All three of these cities are the centres of an extensive and rich agricultural country, and their retail trade, to supply the surrounding districts, will increase from year to year; but their former wholesale business seems on the decline, and is rapidly concentrating in San Francisco. Indeed, it is apparent that the Golden Gate city will skim the cream of every enterprise of magnitude, whether it be in Washoe, in any of the hundreds of towns in the state, Oregon, Washington Territory, British Columbia, the Sandwich Islands, or the Pacific side of Mexico. F.

PROTRACTED IRRIGATION.

DURING a recent extended tour through many districts in the mountains, we everywhere saw that great stress was laid upon the best means to procure copious irrigation of fruit trees. More than two-thirds of all the trees planted out in the mining sections, have been set on ground which has had no subsequent cultivation, the reliance upon water being made to preserve the tree during the heat of a protracted summer. In all of such orchards, grass, weeds, or stubble, is seen growing over the entire spaces between the trees, which has the effect to harden the

ground, so that it is impossible for the roots to extend themselves. The plan of irrigating in these places is to let a stream of water flow in a small trench alongside of the trees, close to the stems; this causes a bunch of thick hairy roots to shoot out just under the surface of the ground, which practically dwarf, if they do not kill the tree, as the ground soon dries up harder than ever, when these fibrous sponge-like roots perish. Irrigation, to be beneficial, should be copious, and the water kept at a distance from the tree, so that the roots may go a longer distance in search of food and moisture.

Great injury also is done by late irrigation, as if the water is kept on after the first of September, the trees are apt to grow so late that the wood is not matured when the frosts of winter strike them. Then again, bearing trees, which have developed the fruit buds for bearing the next season, are apt to be expanded into branches, or swelled so that they open and form a roseate of leaves, thus destroying the fruit crop.

Our mountain amateurs would be far better satisfied with their fruit culture if they would adopt the plan of keeping their soil in a mellow pulverized condition, than by such excessive irrigation. F.

CHIT CHAT ON EVERY DAY MATTERS.

"CHURN, churn! I do wonder if the butter will never come?" said Susy Willetts one warm summer morning. "How I wish Aunt Betsey would come round, for she could tell me just what to do. Ah! I was just thinking if you would only take it into your head to come to-day, for I am sadly puzzled, and you always seem to know how to make everything go right."

"Well, Susy, we cannot expect a young girl of sixteen to work as well as a person of forty, so tell me at once what is the trouble; is it the butter?" And the pleasant face smiled so sweetly, the young girl felt that the cloud was lifted.

"Why, Aunt Betsey, I do not know what is the reason, but it looks so white, and is all in such little crumbles, I cannot seem to collect it." "And father had to go to town to-day; though," she added, laughing, "I do not think he could help me much, only the churning part."

"The cream is too warm, I suppose, child; run and get a tub and set the churn into it, while I go and get some cold water from the spring. Now, we will pour as much into the tub as the churn will bear without floating. I thought I'd come and chat a little with you on every day matters, and it might as well be butter, as anything else, as you are a new hand at it. But give me that large apron and I'll churn a while and rest you. Now tell me where you keep the cream pot?"

"In the cellar where we keep the milk."

"Do you find on going into it in the morning that it is warmer than it is out of doors."

"Oh! yes; I often think so; and father says I shall have a better place before another spring sets in. But now there is so much to do, and he cannot afford to hire work; and you know he will not incur a debt if it is possible to avoid it."

"That is where he is right, child; and I do not doubt he will make a good farmer yet, for I never knew a Willetts to fail in what they undertake. But I will tell you what I do these warm nights: I find the coolest place I can and set my cream pot out of doors where it will be safe. Then in the morning I scald and cool my churn, just as you did the tray, pouring in boiling water first, then turning that out, and cooling it with the coldest water before I pour my cream in. By the way, if I have any pans to skim on the morning that I wish to churn, I skim them into a smaller pan and set the pan of cream in cold water till I get my churn ready. I know it is some trouble, but it is nothing to poor butter." "See," continued Aunt Betsy, "I think we have some butter now, though it may trouble you to work it properly."

"Aunt Betsey, do you ever use your hands in working butter?"

"Yes, I always do; I know some say you must not do so, but I can get it clear of the buttermilk much easier. When I scald my tray and butter paddles, I dip my hands in too, and then plunge them into the coldest water I can get; it's a down east fashion, and I know my old grandmother used to make butter that would keep two years, and be sweet to the last. But I would not, if I did not enjoy such good health as I do, though if your hands are always prepared as I tell you, you never need fear having the butter adhere to them."

"Well, now, you have worked your butter all you can; as it is so soft, let me sift the salt in for you. Now, I will wring this piece of cloth in salt and water and spread it in a pan for you; put your butter in and turn the corners over, thus preventing any waste in taking it out. Now put another pan over it and envelope them both in this piece of blanket wrung out of salt and water, and we will set it in the cellar till night, where, if I were in your place, I would place it just as it is out of doors, for I find it hardens so much better that way; then as early as possible in the morning you can work it over, and I think you will find your butter repay you for your trouble."

"Aunt Betsey, will you please tell me why you use salt and water so much, and why you put the wet blanket round the pan?"

"Well, Susy, you see when I was quite young, I tried to make some ice cream from a receipt. Mother was away and I thought I was all right. I mixed the milk, eggs and sugar and scalded it as directed, but after putting my kettle of cream in the tub of ice, I could not see that it would freeze. I stirred and worked over it till mother came home, and I told her everything I had done. She laughed at me and said, "Ah! Betsey, you forgot the salt." I then remembered she put rock salt with the ice; I got some at once, and soon had some nice ice cream. Well, I never forgot that salt, and when I began to make butter in this country, thought I would try it, and I have good hard butter. As to the wet blankets: when we lived in the states, we always took ice, and always wrapped it in a piece of blanket; it would last longer than any other way. I thought I had better use them in this case, and

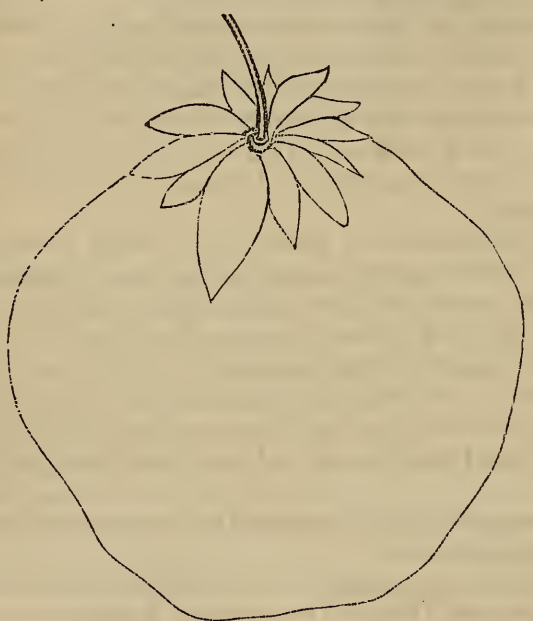
having succeeded so well, tell you of it, as I think every one should impart all useful information; but I must go home as it is time to get dinner."

"Thank you, Aunt Betsey. I am sure," said Susy, "I will not forget; but what shall I do in winter when it gets too cold?"

"Oh! I'll tell you all about that the next time I come." C.

WIZARD OF THE NORTH STRAWBERRY.

UNDER the head of New and Rare Fruits, the *Gardener's Monthly* describes a new strawberry of magnificent proportions—if such a term can be applied to a berry—and gives a colored plate, with the size and general form of the fruit. We simply give a correct outline of the same, exhibiting its form and size. We have been accustomed to seeing the Chili strawberry of a size, in a few instances, equal to this, of the Wizard of the North; but never before have we seen anything to compare with this new variety, originating from any of our more generally cultivated sorts. If this berry will do well in England, exceeding in size all other known varieties, what may it not do in the climate and soil of Oakland and Alameda, in our own state? We hope some amateur culturist will lose no time in sending for this truly remarkable berry. We copy what the *Monthly* says of it. W.



"It is said to be the largest variety ever grown, and was raised from seed by John Robertson, of Linside, in 1853; first fruited in 1855, and exhibited before the Paisly Horticultural Society, July 16, 1857, where it was awarded the first prize. A single plant shown at that time, yielded seventy berries, many of them of mammoth size, the largest being nine and one-eighth inches in circumference, though planted only fifteen months.

THE PEACHES OF 1860.

SMALL and sour, sour and small, are the characteristic qualities of the peaches that to the present time have illy graced our markets. No year since the introduction of this fruit to general cultivation in California have we seen so few baskets of really delicious peaches. We can ascribe it to nothing more certainly than the

cold, wet, backward spring. Trees in most instances blossomed and leaved in good time; but the slow growth, and yet slower maturity of the fruit, has thus far only given us a medium size and quality. It cannot be attributed to the curl leaf, which has so generally prevailed, because upon trees unaffected by this disease the fruit is still small and inferior in flavor. In fact, the disease known as the curl is more than probable a result of the same cause that has produced this year our inferior fruit.

Culturists may differ in their opinions as to the causes producing either; but we believe most will willingly attribute the poorer quality to excessive cold and wet. It is generally the practice of our nurserymen, as well as orchardists, to encourage a growth of surface roots to most of their trees, and generally at the expense of the more deeply running ones, care being taken to destroy at the time of transplanting any semblance of a tap root; as though a tree did not need that which it is its first effort to produce from the first germination of the seed. The consequence of such planting is to induce an undue proportion of surface roots easily affected by any change of climate, and particularly exposed to sudden heat and cold. It is noticed that where trees were deeply mulched during the winter and early spring, that the fruit is larger and finer of the same varieties than upon trees not so mulched; not because the soil was enriched by mulching, for in the instance we refer to only beach sand was used, laid on purposely to keep down, or entirely prevent, a growth of weeds. The effect was simply to bury all the roots deeper below the surface than their natural position, and consequently less liable to the sudden changes of heat and cold, though equally exposed to rains or superfluous moisture.

It is well known that a depth of three feet below the surface of the ground but very little change of temperature occurs between summer and winter, and, therefore, the nearer the roots of trees are to the surface, the more exposed to cold, and the deeper they are the less exposed to all atmospheric changes. The present season has amply proved that it is not the abundance of rain or moisture that has deteriorated our fruit, except in connection with the extreme and prolonged cold of the season upon the surface roots. W.

FENCING.

EDITORS CULTURIST:—The time is coming—now is—when a substitute for the present expensive fencing material will be desirable. Even here among the foothills, covered as they are with timber, the necessity exists. We have but an indifferent article for posts, and not abundant at that, while the siding is hauled from a distance at a heavy expense. In consequence, but a few acres are substantially enclosed, surrounding the buildings and a portion of the cultivated grounds, while fallen timber and brush, or marked trees, enclose or indicate the balance of the possession.

In the list of premiums offered by the State Agricultural Society is one for hedges. The subject has been alluded to and discussed in the CULTURIST, with reference,

however, I believe to foreign hedge plants, such as osage orange, hawthorn, buck thorn, etc. It appears to me that we have the *native* material, suited to the soil and climate, especially among the foot-hills, and one that would make a formidable barrier against "man or beast," in the *chaparral* which cover all our hill sides. Its character and habit of growth is well suited to that purpose—slow, dwarfish, upright and compact, and with a power of resistance which but few shrubs possess. Their natural properties, too, may be still further improved by the shears and the pruning knife, which is evident from the effect of browsing by the cattle that range among them, which thickens and strengthens the branches, and obviously without injury to the shrub.

Though the chaparral has a tendency to the tap-root order, I think it may be successfully transplanted—the young shrub—taken at the proper season of the year and following the rules necessary in the transplanting of evergreens. Or may it not be raised from the *seed* sown where the hedge is desired to be grown? The seed, I am told, may be gathered in abundance; but what are its germinating habits; has any experiment been made?

Of the qualities of the chaparral as a hedge plant, there can be little doubt, if capable of being transplanted, or grown in the hedge even; and its compactness and power of resistance, the downward tendency of its roots, which leaves it in occupation of scarcely any more ground than it stands upon, its evergreen foliage, white blossoms and their perfume, combine beauty and utility in an eminent degree.

Another material, though of less beauty, still beautiful, of equal or superior qualities for strength and durability, may be found in the live oak, and which may be grown almost as easily as a hedge of peach trees. The habit of the tree is of slow growth, limbing low, with branches stiff and unyielding—habits that may be improved upon by a proper use of the pruning knife. A hedge planted from the acorns, by the time the brush structure had become decayed and worthless, would supply its place by a living barrier, and with less time and expense in heading back and cutting in, than to keep an ordinary fence in repair, and would last for centuries.

Gold Hill, August, 1869. T. A. S.

SHEEP TO CLEAN LAND.

In many parts of our State, grain lands have become so foul that much of the substance of the soil is exhausted in the nourishment of weeds, which not only destroy the vigor of the straw, but greatly deteriorate the quality of the grain, by an intermixture of foul substances, which are difficult to be separated even by the smut machine, as some species of weeds have a glutinous, tarry substance, which adheres to the kernel, and gives the flour a bitter taste. Indeed, the price of wheat, from this cause, may be said to vary from one-half to one cent. per pound. This makes an aggregate loss to our farmers of so great a magnitude, that some remedy, commensurate with the importance of the subject, demands serious attention.

As our climate favors the early sowing of grain in the fall, if the season is propitious, the crop will generally get the start of weeds, and choke them out; yet many stragglers will under the most successful treatment get a foothold, and mature with the grain, so as to give ample reseeding for another year.

One mode of cleaning land, extensively adopted in Europe, and already introduced with satisfactory results in California, is to herd sheep on the fields after the grain has been harvested. To do this to the greatest advantage on large farms, would require that the fields should be fenced into subdivisions, so that one certain field could be fed off entirely, when the sheep could be shifted during the day into a fresh field, and returned every night to the first enclosure, this being used during the season as a *corral.* This would have the effect to manure this piece thoroughly, so as to keep up the fertility of the soil, which would otherwise become impoverished by constantly exhaustive cereal crops. Thus by occupying other fields in succession in alternate years, the soil on large farms can be kept clean of noxious weeds, and the land made more fertile. This suggests another clue whereby our farmers may subdivide their products, so as not to have their eggs all in one basket. A portion of the farm may be kept for sheep pasture, while the greater amount of grain grown on a less space, with a better husbandry, will become far more remunerative; while the fleeces of the sheep, as well as some fat wethers for mutton, will always put the farmer in funds to do his harvesting, without being dependent on the commission merchant, whose advances always eventuate with an apalling interest account. F.

DEPOPULATION OF THE BEE-HIVE.

BY J. S. HARBISON.

THAT a hive of bees should be found to depopulate rapidly during the latter part of summer and fall, although breeding continues to a great extent through the former and to some extent during the latter, is a mystery that may well excite alarm in the minds of novices and lead them to suppose that their bees were, or are, being unfairly dealt with by designing persons. As no information on this subject is given in any of the published works on bees, it was only possible to find it out by actual observation; this, however, has recently been done by a number of apiarists of California. They, however, attribute it to other than what is probably the true cause.

It is a well known fact that under favorable circumstances the honey-bee increases with wonderful rapidity, but it is not so generally known that they are equally short lived. The duration of their lives varies with the seasons: those bred in the spring and early part of summer have the great burthen of the labors of the hive to perform; they not only labor with such zeal as to shorten their lives, but are thereby constantly exposed to the vicissitudes of the season, such as storms or extreme change from heat to cold, either of which destroys vast numbers of them, yet seldom enough to seriously affect the prosperity of the hive the following season. I have frequently

seen hives, as well as whole stocks, lose from one-fourth to one-half of their bees within the space of one week, clearly traceable to the above cause.

As a proof that their lives are shortened by excessive labor, I have frequently noticed that in hives commencing to fill surplus honey boxes at any time after the first of July, that more bees usually then exist than at the time the boxes were filled ready for removal; this is more noticeable in some hives than others. I have thus been forced to conclude that comparatively few of the numbers of the swarm actually engaged in garnering up luscious stores, live to enjoy them through the winter, consequently their stores descend to the young generations succeeding them. The inheritors are thus enabled to pass the winter in plenteous ease. But as soon as the flowers bloom on the return of spring, they in turn fulfill their mission in like manner to their predecessors.

In addition to the foregoing causes of depopulation, I might name starvation as a very common one, leading as it frequently does to massacre and pillage. In cities there are frequently large numbers of bees lost by entering candy shops and buildings where sugar is stored; they fly to the windows where, unable to get through, they remain and perish unless set at liberty.

NORTHERN DISTRICT FAIR.

THE late fair of the "Agricultural, Horticultural and Mechanics' Society of the Northern District of California," held in Marysville during the first and second weeks of the present month—September—is spoken of by those who were in attendance as a success, highly creditable to its members and to that district of California represented by the society. We found it impossible to be present; but Mr. Flint our present copartner in the CULTURIST, was, and in the absence of T. Starr King, who was expected to deliver the annual address, was called upon to address the society. W.

ADDRESS OF WILSON FLINT.

Mr. President, and Ladies and Gentlemen:

Arriving in your city yesterday, and being equally with yourselves disappointed, in not having the gratification last evening of listening to the anticipated annual address, to have been delivered before your society by a renowned orator, I share with you the hope that the malady which detains him from among you may be brief, and of happy termination. Nor can I hope that my feeble efforts to entertain you on this grand occasion will, to any considerable extent, ameliorate a foregone disappointment.

Crude indeed must be the ideas which I am able to present to you, as the subjects requiring discussion on occasions like this, have for their basis the world of nature, art and science, each having a record dating back to remote periods, all historical of human progress. To properly investigate all these, so that agriculture may claim her due share of glory and renown, requires time and laborious investigation.

A little more than ten years since it was my fortune to have made my way through the dense thickets on the south side of the Yuba, where now wave great corn fields. The swift ford of sparkling waters passed, found me under a sycamore tree near where now stands the Merchants' Hotel, just as the sun shot down in the west behind thick storm clouds and the darkness of night. What few gleams of day yet lingered showed no signs of a hospitable roof. Here and there was a frail tent or wretched shanty, forbidding as the dusky sky. Supper of dainty viands there was not, and I could truly say with the immortal bard, "I've supped on horrors." Spreading my blankets by the trunk of that friendly old tree, I retired for the night, and dreamed—of empire. The music that lulled the restless brain sang in the requiem of the storm, and found accompaniment from the castanets of the crashing forest timber; nor forgot the owl to hoot solemn measure, or the coyote to ring sharp cadence.

The morrow came; and where the parting sun last looked upon a lisping stream, his rising saw a raging torrent and an inland sea. But men were here to found a city, and no calamity could appal them. Graves opened then as now, and human sympathy which had soothed the stranger's last hour, dropped into the silent house of all the dead the tears of rigid manhood; seeds of faith and hope which spring up around us to-day in a full fruition of blessed realities. If it had been my lot to have remained among you through the past decade of years, I would to-day with humble awe thank God that I had been one of those who had been instrumental, however obscure and lowly my station, in rearing upon this beautiful plain, so late a wilderness, a city whose equal for enterprise, wealth, beauty of its public and private edifices, educational facilities and morality, may in vain be sought the world over.

For this most unexampled prosperity you are indebted to your favorable agricultural locality, and the amazing richness and extensive development of the gold placers in your immediate vicinity. That these mines will continue to be productive and afford your farmers a market for their products for a long time, there can be no doubt; but you are surrounded by an area of lands varying in adaptability to all kinds of products known to the uses of man, of such extent that their proper subdivision and cultivation might usefully employ millions of people. If you contemplate the present with the heroism of self-denial, you will perceive what a mighty drama is to be enacted in the future, from which time is hourly drawing the curtain.

It is true, you have toiled upward and onward amid discouragements which would have appalled any other people; and many of you have been abundantly blessed with station and fortune, and perhaps sometimes gaze with longing eyes upon other lands for repose and pastime, and sometimes turn your backs with disdain on the land which had so prospered you. Let me ask you in all candor and kindness, is this right? Have that people no claims upon you, who have contributed to your prosperity by that material and mutual aid which has led them to believe you are of them and for them? There are communities growing up in our State, isolated from social and school privileges, and were you to remain amongst us, you might by the application of a moiety of your hoarded wealth, raise up from ignorance and crime some one or more of the children of misfortune that they might bless you, because

you had saved them from degradation by the force of example, which knows wisely how to distribute material aid; whereas, if you turn your back upon the state as soon as your ungrateful coffers are filled to repletion, you may be assured that the sentiment here will be, that California would have been far better off had you never entered the state.

That so many people should leave California after acquiring a competence is attributed to the fact that our present population is gathered from the four quarters of the globe, and consequently, while in this country, are deprived of the society of old associates; and having had few opportunities to form new ones, owing to all having come here strangers, and afterwards lived in isolated places, there are not opportunities for the formation of new friendships. This matter it is in our power to remedy, to a great extent, and its most happy mode of accomplishment is presented through the medium of industrial fairs. On occasions like this, old and young, the gay and sedate, of mountain and plain, may come together in a grand mass social reunion, where diverse mind or erratic taste will meet its affinity, and life's long journey will be made with new companionship, and its rugged pathway strown with flowers of friendship which otherwise might have bloomed unseen and

"Shed their fragrance on the desert air."

While all acknowledge the gratification they experience on visiting your Pavilion and grounds, where may be seen the wonderful productions of husbandry and art, it were well that they should resolve that no future occasion should pass, in whose display there should not be found some one thing or another, as an attesting witness that you are no drone in society. It is a painful truth, that at the annual return of our fairs, there not only can be found at a distance but in the immediate neighborhood, numbers of persons who refuse to exhibit articles which would add greatly to the interest of the association, because they indulge a silly personal spleen, thus detracting from the usefulness of the fair, which is designed to illustrate and advance the prosperity of the general public. Others again plead business engagements as an excuse for throwing the labors of preparing the exhibitions upon an enthusiastic few, and when called upon for that material aid which is the spinal marrow of industrial exhibitions, coldly shrug their shoulders and niggardly refuse to give a moiety of those profits of trade which are brought to their doors by the throngs of people, from abroad, who come to visit the show. I trust these remarks will not be found applicable to this latitude—I am aware that this people are proverbial for their liberality.

The first epoch of California Anglo-American history, was the gold discovery and its subsequent rapid settlement, by the introduction of all those arts and refinements which accompany the train of women and children. This period has been reached and passed, and great communities are beginning to scan, with eager vision, the mighty future, which requires the ken of no prophetic eye to see unfolding before us, with all effulgence of hope, never before viewed since the dawn of creation.

All over our State we are surrounded by an abundance of those material gifts of the Creator, which are greatly in excess of home consumption, and it behooves us to

turn our eyes abroad for world-wide markets, to reach which it will be necessary to open artificial channels of transportation. In this connection it is a happy cause of congratulation for the people of your city to know, that human foresight is already providing the means of rapid and cheap transportation, over the iron road, to the waters of the golden gates. In this you will master the necessities of the hour and grasp the scepter of commerce.

As I gaze on your tables, loaded with the acclimated produce of all lands, the thought occurs to me that this country presents the best opportunities for subdivisions of labor found on either hemisphere. Before us are seen the clusters of the generous vine, claiming variety in their order, ranging from phlegmatic Hamburg of the Baltic to luscious Muscat of Alexandrian Oasis, from the golden Chasselas of vivacious France to Purple Damascus of ante-diluvian record, of Black Portugal, voluptuous as her dusky daughters, to violet Catawba, festooning in fervent embrace the cypress glades of Santee or the giant sycamores that bend as withes to the father of waters.

In your exhibit of apples may be seen the crimson Astrachan of the Black Sea, the perfumed Gravenstine of Germany, the Drap'd'or of France, the Wette Pippin of England, Rivette of Canada, and the luscious Greenings and Baldwins of America; and let me add, that I am happy not to find here the apple of discord, that belongs to sacred history. Let its sad lesson teach us all never to transgress the natural laws which are designed for our social and spiritual good.

To enumerate the great variety of products on exhibition, all worthy of commendation, would tax your patience, and I pass their examination, and will only detain you a short time longer, to call especial attention to two branches of industry, diverse in their nature; one already of commanding importance, and the other in no long time distant to be its coequal.

In your exhibition of cattle, horses, sheep and swine, are to be seen very many thoroughbred animals, and from the interest manifested in the improvement of breeds of stock, it is evident that their increase will be more rapid than the means of properly feeding them can be had.

This would suggest to you the immediate necessity of cultivating forage crops on an extended scale. Your short-horn is a generous feeder and select in his diet, and it cannot be supposed that he will maintain his grand proportions under the physiology of a starving hygiene.

The last branch of industry which I propose to discuss, is the growing of silk. It is being discovered in the great silk growing districts of France and Italy that the quality of the silk is deteriorating, and its cultivation attended with less favorable results. It is attributed to the phenomena of colder and moister seasons, which render the leaf of the Mulberry viscid, and filled with watery gasses which sicken the worms. Indeed, the cultivation of the white Italian Mulberry is in a measure abandoned, because the worms are no longer healthy, which feed upon it, so that an inferior kind of the Mulberry trees is substituted, which, as a natural result, produces a less valuable silk.

Now California has a dry, temperate atmosphere, and the characteristic of all tree leaves is a dark green hue. Thus it will be seen that we can grow the white Italian Mulberry in perfection, so that the cocoons spun from its elaboration will be of superior excellence.

There may be seen in your exhibition a boquet of cocoons, spun in the establishment of a gentleman at San Jose, which will challenge the world for competition.

The cultivation of the mulberry for hedge or shade trees is of easy accomplishment. It is a tree never infested by vermin, and it is said no insects feed on its foliage except the silk worm. This feature would render it a valuable tree to plant out around and among vineyards and orchards. Then the gathering of the leaves and feeding them to the worms in the cocoonery, is a light and fascinating employment, adapted to the slender efforts of women and children.

Since the amelioration of woman's labor, by the introduction of sewing machines, it becomes necessary that new sources of employment should be opened to her hands. Educated in our America, to a knowledge of the arts and sciences, and endowed by common consent with mental qualities equal wth her masculine associate, woman certainly, in this practical age, will not be content to pass her precious time in the fabrication of gew-gaws. May she not, then, in the raising of this unequaled fiber, which is to adorn her person, find occupation for hours which otherwise would have been lost in lethe's stream? Will she not by out-door exercise strengthen her fragile form, pencil the rose of health on cheeks otherwise wan and wasted, and eminently qualify herself for those matronly vicissitudes which form the character of those she rears to rule the great future.

In conclusion, ladies and gentlemen, I thank you for the kind attention you have given my extempore effort to entertain you, and feeling profoundly grateful for the honor of being permitted to speak to you, I bid you good night, hoping the blessing of heaven may forever attend you.

IMPORTANCE OF SALT IN AGRICULTURE.

IF we should ask why so enormous a quantity of this inestimable gift of salt is distributed throughout the earth; why three-fourths of the surface of the planet designed for the home of man is covered with it; the answer would be: In order to preserve the work of nature, to enable man the more to sustain himself, and to make him wealthier and better. It has become an indispensable condition for the existence of man and his civilization. In all organic beings we meet with two processes—that of life and that of decomposition—the latter beginning its full activity after the former has achieved its end, at the moment when organic beings are dissolved into those constituents from which the plant was formed and nourished.

If, however, we intend to check, or at least delay decomposition, we must employ acids; for we know that the Creator formed of the sea-salt a mighty barrier against the immeasureable mass of water becoming putrid; we know that our stocks of

flesh, grease, etc., are preserved by the application of salt; that cabbage-water, acids in general, and the kitchen-salt are the means employed by the agriculturist against septic diseases in our domestic animals, and against diseases of the mouth and feet. The separation of milk and deposit of meat will be increased by the application of salt, thus forming an essential means for the promotion of cattle-raising. By the application of salt, the fruits, especially wine, will become much better; and even the ancients were in the habit of throwing salt on their grounds, their vineyards and fruit trees. Agricultural chemistry informs us that the simplest combinations through which nourishment is conveyed to plants consist in acids, alkalies and alkaline substances. Animal chemistry shows that free muriatic acid and kitchen-salt form the principal constituents of the contents of the stomach.

In a French prize paper, by Dr. Desaive, on the manifold advantages of the use of salt in agriculture, the following results have been laid down by the celebrated French veterinary surgeon, Grogniez:

Common salt serves as a preventive of the fermentation and heating of hay, which has been heaped up in large stacks during wet weather. Forty quintals of hay require fifteen pounds of salt, to be strewn among it in alternate layers.

This effect is much better shown in straw, which, if intended to be used as fodder, by being moistened with salt water, may be preserved for a long time, when it can be given to cattle instead of hay—a method in use among the ancients.

Leaves of trees, when put in ditches with salt, may be prevented for a long time from putrefaction, and will even make good forage. Intelligent farmers of the Mont d' Orlyonais are in the habit of thus preserving their vine leaves as fodder for goats.

Fodder of inferior quality, for instance, straw, or other kinds, soaked and bleached by rain and sun, cured too late, or become woody, may be rendered more palatable and easy of digestion by being salted. A pound of salt in three quarts of water is required for a quintal of bad hay.

The sharp taste which the milk of cows usually assumes in consequence of beets, turnips and white cabbage being continually fed to them, can be removed by salting those vegetables.

In Flanders, common salt is strewn on new and wet oats, to be fed to horses, and thus prepared, will not be dangerous to the animals. The same application may also be made to hay newly harvested, to prevent injuries when it may become necessary to feed such hay, the moisture of which has not been fully evaporated.

Though the bad qualities of dusty, muddy, or moldy fodder, after having been washed and threshed, are not entirely removed, yet by giving a sprinkliug of salt water they will be diminished to a considerable degree. This fact will be of advantage to the farmer whenever he may be in want of appropriate fodder.

By means of salt, such water as otherwise could not be used for cattle for drinking, will be rendered proper.

The great advantages to be derived from common salt with regard to the health of cattle have been clearly shown by many experiments made by that learned and celebrated agriculturist of Alsace, M. Boussingault. Cattle, by being fed with salt,

receive a soft and glossy skin, their digestion and appetite are in good order, and they increase in flesh and strength. Cows thus fed yield much milk, while those treated otherwise have dull skins, with rough hairs, exhibit less appetite, produce a smaller amount of flesh, and yield not only an inferior quantity, but also quality of milk.

Manure from cattle fed with salted fodder is also of a better quality.

Finally, manuring with salt will banish mosses and hurtful parasitical plants from meadows.—*Patent Office Report*, 1859.

SILK CULTURE.

BY L. CONSTANT, OF CAT SPRINGS, AUSTIN COUNTY, TEXAS.

FAMILIAR with the climate of Southern Europe, and for twelve years a resident of Texas, I had my attention directed long ago to silk culture. Several attempts to import eggs, *via* Bordeaux, proved unsuccessful, the worms having already left their eggs when I came into possession. At a later period I ordered from Bolzani, a silk-raiser in Berlin, and received them in a perfect state, though transported in winter. They were well packed in linen. Without paying them any special attention, I kept the eggs, still so packed, in a drawer, from the first of January to the tenth of May, without injury. At an average temperature of seventy-four degrees Fahrenheit, I soaked the eggs for some six hours in a mixture of brandy and water, wiped them well with a piece of smooth linen, and put them into a small, flat, wooden box, exposing it to the rays of the sun, covered slightly with a few mulberry leaves, which, as they withered, were constantly substituted by fresh ones. During the nights, I kept the box warm by putting some cotton loosely around it. By this method, differing altogether from that used in Europe—where the eggs are hatched either in rooms of an equal temperature, or on the bosom of females—I succeeded very well. After six days all the vigorous worms had left their eggs, appeared very lively, and partook freely of the young leaves of *morus multicaulis*. The feeding was done on the usual wicker-work, placed in my room, which was kept open by day and shut by night. When a warm and equal temperature began, which lasted during the whole month of June, it was a very favorable period to the worms; yet I was surprised at the extraordinary facility displayed by them in completing their four changes, and pleased to find that, on the twenty-eighth day after their birth, the transformation into the chrysalis had already begun. On the sixth day after their birth, I transferred part of the worms into the open air, removing them from the wicker-work to the mulberry trees, by fixing there the branches of those leaves already occupied, from which they soon spread. They continued in good health, appeared lively, and became more vigorous than those kept in the room. I did not supply the former with any huts, in which to go through the process of changing into the chrysalis; but those kept in the room were furnished with shocks made of fine straw, and similar to small brooms without a handle. On the thirty-second day after their birth

they had already involved themselves, or begun their spinning. I possessed one-fourth of an ounce of grains, the fourth part of which was hatched, and the rest I threw away, so as not to raise worms of different ages. They produced somewhat over a pound of cocoons, which, either together with their huts or collected from the trees, were put into a box lined with coarse linen, and placed in a dark corner of the room. After ten days the insects crept out, and within four days laid seven-eighths of an ounce of eggs, which kept very well until next spring; but on the occasion of a heavy rain they became wet and unfit for use, simply because the mischief done had not been noticed until too late. From the close attention I devoted to them, I found that not a single worm became sick or died in the course of their development; and almost without an exception they went through the changing process with ease and rapidity. They were fond of the leaves of the *morus multicaulis*, eating them with avidity; but refused those of the wild mulberry of this region. The worms raised in the open air were vigorous, and the cocoons beyond all objection. The silk was equal to the best obtained from Turin, the thread of the cocoon being some five hundred to seven hundred yards in length. It is my intention to continue these experiments.—*Patent Office Report*, 1859.

THE RADISH, AND FRUITS OF JAPAN.

BY TOWNSEND HARRIS, UNITED STATES CONSUL, SIMODA.

THE statements in the "World in Miniature," concerning the Japan radish, are much exaggerated. It is true that radishes are grown in every part of Japan, but nowhere are they a principal article of food; they are merely an adjunct to rice, wheat, and barley, which are the great staples of the country.

I ordered the best specimens of the long radish brought to me when I first visited Yedo; the longest were less than thirty inches, and about one inch in diameter. This radish, when dried, loses more than three-fourths of its bulk, and looks very like a whip-thong. Specimens of another kind wese also brought to me. These were shaped like our parsnips; the largest measured eighteen inches in the length, and fifteen in circumference, and weighed four pounds and five ounces, avoirdupois.

All the radishes of Japan, when used as a salad, are inferior to the garden radish of the West, being tough, and not of an agreeable flavor. When boiled, they are quite insipid, having nothing of the flavor of the white turnip or rutabaga.

Only trifling attention is paid to the cultivation of fruit in this country; cherry and plum trees produce magnificent blossoms, but bear very little fruit, and that little worthless. Peaches are far inferior to those of China, being quite bitter; and the same remark will apply to the apricot.

I have seen only one variety of pears; they resemble in shape and color a russet apple, but are unfit to eat raw, and when cooked are quite insipid. The best grapes of Japan are like the Catawba in appearance, but inferior to that variety.

The only fruit that I have seen in Japan that particularly merits notice, is the

Kaki, a variety of *Diospyros*, and belongs to the order *Ebenaceæ*. It is really worthy of being introduced into the United States. Many kinds have been brought to me. One has a skin as thin as tissue paper, and the pulp resembles in flavor the Egyptian fig. Another variety has a thick rind and a finer pulp, while the taste strongly reminds me of the delicious mango of Siam and Bombay. The tree is very ornamental, and of rapid growth; it would, no doubt, succeed in any part of the United States south of thirty-seven degrees of latitude. Unlike the persimmon of the United States, there is very little astringency in the skin of the fruit, and frost, which matures the persimmon, greatly injures the kaki. This fruit varies in size, but is always larger than its American relative, and some are seven inches in diameter; it is in season nearly three months. The Japanese dry it, when it will keep for some four months, and has a taste like that of the dried Smyrna fig.—*Patent Office Report*, 1859.

CALIFORNIA A CORN STATE.

THERE has been a wide and long prevailing fallacy that California could not grow corn to any considerable extent, on account of our long dry seasons and the coldness of the night. This erroneous impression has been removed, to some extent, by the farmers of Russian river valley, who have been annually increasing the breadth of their corn fields; but it was thought that this great and invaluable staple could never become a product of any considerable moment, and it is only for the first time that much breadth of land has been planted in various parts of the state. Doubtless, if the aggregate of corn that will be produced in the state this season could be ascertained, it would make a total of bushels to create surprise. We have recently visited one field in Ione valley of two hundred and fifty acres, which will equal if not surpass the famous corn fields of the Miami bottoms in its product per acre. Again, we went among the swamps of corn growing around the confluence of the Yuba and Feather rivers, which indicate a prodigious yield, and it is giving so great promise that the farmers in that locality are intending to go largely into its cultivation the next season. There probably are upwards of one thousand acres this season in a short distance from Marysville, and from what we could learn there has been much planted higher up the Feather and along the upper Sacramento river banks. The rivers coming down from mining localities have brought a vast deposit of sediment, which have filled their beds so nearly full that the bottom lands have become moist, and at this time (15th August) planting could be done with a certainty of germination. Indeed, these bottoms, naturally rich, have been so stimulated by this kind of irrigation that wheat and barley make an enormous growth of straw at the expense of grain, and wheat growing on such land will be abandoned. Now these lands are admirably adapted for hay, and this crop can be cut in May so that the sward can be turned under and corn planted in time to manure. We noticed on some of the bottoms near Marysville, where the wheat was cut in

June, that a growth of weeds had since sprung up which was higher than a horse's back; this indicates sufficient moisture to grow a crop of corn after the hay is removed; our experience in corn planting, satisfying us that it is best not to plant until the weather becomes warm. If corn is planted when the ground is cold the radicles first thrown out are feeble and stunted, whereas if the ground has become warm they are very vigorous on the start, and push the growth of the stalk with greatly accelerated speed. We saw one field near Marysville which was not planted until the fore part of July, which is now silking out and gives promise of equaling, if not excelling some fields planted in April. We are informed by an intelligent farmer, who has repeatedly tried the experiment, that corn is worth two and one-half cents per pound to fatten pork. This certainly is a far better showing than to raise wheat at one and one-half, especially as corn will produce double the number of pounds to the acre. A large proportion of the people of California are from the northern and southwestern states, and have been accustomed to use corn and pork largely for culinary purposes; and when they can procure fresh corn meal and California fed bacon and hams, these articles will enter largely into daily consumption. Thus is invited a largely increased production of these remunerating products.

Now while the area is rapidly increasing on which corn can be grown along our rivers having their sources in the mines, we also opine that it can be cultivated to profit on a large portion of the lands, now devoted to wheat and barley, not strictly called bottom lands. Discretion must be used in selecting seed, as it is apparent that the giant growing kinds cannot be expected to do as well on dryer, more sterile soil, as in moist situations. For high land cultivation, we think the small, rapidly maturing kinds preferable, as by a proper tillage of the land there will be sufficient moisture to mature the crop almost anywhere. We have repeatedly urged upon our farmers a greater division of crops, and if they would devote a portion of their farms to raising beets, carrots, parsnips and corn, they would be enabled to breed hogs, which could be fed on roots until of sufficient age to fatten, when their corn cribs could be turned to good account. F.

AMERICAN STEAM CULTIVATORS.

IN a glance at what has been done and attempted by Americans in the way of cultivation by steam, we shall be struck with the predominant idea of "going ahead." While the greatest performance claimed for any English implement is one acre per hour, or eight or ten acres a day, we find American machines actually plowing an acre in ten minutes, and promising to plow sixty acres per day. With the motto, however, which is no favorite with us, of "*festina lente*," it would seem that more real progress might be made. For we shall see that in nearly every attempt at operating these implements the experiments closed by the breaking of some part of the machinery. The United States Agricultural Society, in their premium list for the exhibition in Chicago, in 1859, offered their grand gold medal of honor "for that

machine which shall supersede the plow, as now used, and accomplish the most thorough disintregation of the soil, with the greatest economy of labor, power, time and money."

The medal was awarded to Fawkes' Steam Plow, together with $3,000 offered by the Illinois State Agricultural Society, in connection with the Illinois Central Railroad Company; and thus this implement is placed at once at the head of the list of American steam cultivators, and claims our particular attention.

FAWKES' STEAM PLOW.

This is the invention of Joseph W. Fawkes, of Christiana, Pennsylvania. The striking peculiarities of this machine seem to be, that it is a locomotive, running on a large roller, or drum, six feet in diameter and six feet long, insteed of wheels, the design being to obviate the ordinary objection to locomotives, that their wheels cut into the soil, and obstruct the motion. The engine draws behind it a gang of eight plows, as shown at Chicago, though it is manifest that the number is unlimited, and that cultivators, harrows, and other pulverisers, may readily be substituted; the great desideratum is, a locomotive practicable on a reasonable proportion of land, and at the same time cheap and durable. This machine, and Water's steam plow, which was its only competitor, were both caused by the committee to run twice round the half-mile track at Chicago, and to turn a single furrow within the inclosure. They were then taken to the smooth, open prairie, for final trial. The result, as reported by the Quarterly Journal of Agriculture, was, that Fawkes' implement plowed at the rate of one acre in seventeen minutes, or three and a half acres per hour, including turns, and the work was excellent. There was some detention by clogging of the plows, which may be easily obviated. It would seem that after plowing about two acres, the steam got too low for the continuance of the experiment; and the committee suggest some improvement as expedient for increasing the power of the engine. The committee conclude by remarking, that while they "are by no means prepared to certify that Mr. Fawkes' plowing machine has reached the degree of perfection only to be had after much practical working on a farm, they do not regard its several weak points as invalidating its claim to public favor, for enough good work was done, in the two miles of furrow it run on Friday, to prove it to have good merit."

For the benefit of those who desire an understanding of the details of this implement, we add a description of it by the committee of machanists who conducted the recent trials of steam plows at the fair of the Illinois State Agricultural Society:

"To form a complete conception of this steam plow, let the committee recall the appearance of a small-sized tender of a locomotive engine. Let about half the forward portion of sides and tank be removed. We now have something which resembles the body of Fawkes' machine. In the middle of the forward portion of the platform stands the upright boiler, which is about six and a half feet high and four feet in diameter, the fire-box and ash-pit being of course below the level of the platform, and the fire-door opening forward. The boiler contains two hundred and

twenty one and a half-inch tubes, which, computed with the fire-box, gives three hundred and seventy-five feet of fire surface. Steam may be got up in fifteen minutes, although twice that time is usually necessary. The fuel may either be bituminous coal or wood. The cylinders are horizontal, nine inches in diameter and fifteen inches stroke, and are placed one on each side of the boiler. The pistons communicate motion, not to the side-wheels, but to a drum or roller, six feet in diameter and six feet long, which, as the sides of the platform overhang its end, is comparatively out of sight. The drum is placed about midway between the front and back of the machine; before it depends the fire-box, and over and behind it is the tank; so that when the boiler and tank are full they nearly counterbalance each other on the axles of the driving drum.

"This drum is composed of two iron heads or 'spiders,' and an intermediate one; to these, thick, narrow planks, cut like staves, fitting closely, are bolted and form the periphery. The adhesion is, therefore, produced by a surface of wood six feet long, which never becomes polished, and the bearing of which is always across the grain. There is no slipping; the machine is started and stopped instantly; and, except when propelling itself a considerable ditsance on turnpike or paved roads, the wear and tear is slight. This substitution of the driving-roller for the ordinary side-wheels wonderfully increases traction, and prevents sloughing in wet or yielding soil, while moderate irregularities of surface scarcely affect the onward march of the plow. Another great advantage is gained by the gearing of the drum, each connecting rod communicates motion to a pinion which turns easily, but without shake on the axle just mentioned; the pinion interlocks with a cog-wheel which, by a pinion on its axis, imparts motion to the cog-wheel bolted to the drum; the whole being so proportioned that six strokes of the piston cause one revolution of the drum.

"Increase of power and of control over the movements of the engines are secured.

"In front of the fire-box is a short tapering bow of sheet-iron, which serves as a seat for the fireman and a receptacle for fuel. The bow is supported by a body-bolt on a truck composed of two iron guide-wheels three and one-half feet in diameter and fifteen inches broad. The truck moves freely like the front wheels of a chaise, and is controlled by a steering wheel in charge of the engineer, so that the whole machine is turned as readily and as short as a farm-wagon. The engine is thirty horse power. The entire length of the machine is about eighteen feet; its weight with water and fuel, ten tons; and cost, including 'donkey' engine and pump, about $4,000. By this pump, water may be drawn from a well or creek, and the tank filled, or water forced from the tank to the boiler.

"The tank holds twelve barrels, sufficient for three hours' running. The plows, eight in number, are attached to one frame, which is suspended by chains, passing over grooved pullies, in two beams, projecting from the seat of the engine. These chains communicate to a windlass, in charge of the fireman in front, by which a gang of plows may be raised or lowered at pleasure, and the frame of plows is drawn by other chains, which are attached to the under side of the frame of the engine."

WATERS' STEAM PLOW.

James Waters, of Detroit, formerly of Pennsylvania, is the inventor of a steam plow, which, at Chicago and elsewhere, has attracted much notice. It is thus well described by a correspondent of the "*Country Gentleman:*"

"This machine has four cylinders, five and three-quarter inches in diameter, the stroke of the piston being twelve inches. The boiler, which is the one used on locomotive engines, is six feet in length, with one hundred flues, and can bear a pressure of two hundred pounds to the square inch. The driving wheels are ten feet in diameter, and twenty-six inches on the face, each braced with two sets of iron spokes athwart each other. They are turned by means of a pinion connected with the main shaft or axle-tree, which works into an internal gearing of the size of the inside diameter of the wheels. On the outside, pieces or ridges of iron are attached to prevent the wheels from slipping. There are two leading wheels, five feet in diameter, and thirteen inches on the face. The weight of the whole machine is seven and a half tons, which is applied on the front of the driving wheels to produce a steady motion. Two men are required to work this engine, one to steer and the other to attend to the fire. Its working power is one hundred and fifty pounds of steam, while it can be moved with only fifteen or twenty pounds. Underneath the boiler is an iron tank and a fire-box. There is also a tender, which is used for carrying both wood and water.

"Frye's gang plow, another Detroit invention of considerable merit, is the only kind of plow which this machine has drawn yet. The shares of this plow are fixed on a triangular frame, which supports two gangs, and runs on three wheels. They are made expressly for the prairies, and will cut a wide or narrow furrow according to their arrangement on the frame. Mr. Waters states that the width of the cut, counting thirteen shares, is nineteen feet, and that he can plow sixty acres a day."

At the trial at Chicago thirteen plows in three gangs were used, hitched one behind the other, which with the engine, tender, and water cart, made a train of thirty-seven feet in length. The machine, after showing its locomotive powers on the track, was put to its trial on the prairie, and made an astonishing start, turning a breadth of furrows of nineteen feet at one operation, and running three hundred feet in two minutes, or at the rate of an acre in sixteen minutes, when the performance came to an end by the breaking of a wheel. It seems manifest that Mr. Waters' machinery is cumberous and expensive, and equally manifest that he failed at Chicago for want of care or skill in operating his implement, rather than in the principles of his plow.

An obvious objection to this machine is its great length, which renders it unfit for small fields, and the fact that it does not finish up its work, but leaves a strip of fifty feet in the middle to be finished by horse-power.

By the report of the committee at the Chicago exhibition it appears that two other substitutes for the plow were offered for examination, but no account of the performance of either has been published. One of these was offered by John Van Doren & Co., of Chicago, and is described as "a rotary cultivator, driven by steam and self-propelling. Beside plowing, it may be applied to other uses, such as harvesting grain, cutting grass, and, having a pulley of suitable dimensions, may be used as

stationary power for farm machinery. This machine was at work at various times on the fair grounds, but when the committee sent official notice that they were ready to test it in detail the owner could nowhere be found, and no opportunity was afterward afforded until the close of the exhibition."

The other, offered by B. F. Field, of Milwaukie, Wisconsin, say the committee, is "a revolving plow and seeding machine, and is thus made: There is an outer slatted drum of iron, four and a half feet in diameter and five feet wide, made in three sections. Inside, on an eccentric shaft, are fixed three sets of twenty spades each, set eight inches apart on 'spiders,' but all turning on one shaft. As they come in turn below, the spades project beyond the outer drum through the apertures, and the weight of the machine (two tons) being thrown upon them, they enter the ground to the depth of eight inches. The machine turning as it travels forward, the spades coming behind lift the earth as they emerge, and disturb its relative position as would a spade in the hands of a man, except that the soil is not inverted. Behind the spading apparatus, on the back part of the frame which surrounds the whole, is a row of ordinary drill sheaths to deposit the seed in the ground, which is fed to them by suitable hoppers with valves."

It is fair to conclude, from the facts thus brought together, that the subject of steam cultivation is attracting, both in England and America, the greatest attention. As yet, while we cannot admit that in either country any improvement has been tested, which so combines efficiency and economy as to give us assurance of its general adaptation, enough has been done to give us confidence that steam, especially on our broad prairies, must ere long render efficient aid to the farmer in tilling the soil.—*Patent Office Report*, 1859.

CHIT CHAT ON EVERY DAY MATTERS.—In this, which has its commencement on page 120, our readers will recognize a little of home and matter of fact experience by a lady, who proposes to contribute monthly. We believe that many of our fair readers—by this we mean the girls and women of our farms and ranches—will be, not only pleased, but instructed; and coming from one who practices what she writes, it may be looked upon as reliable. C., or Caroline, is truly welcome to our pages. W.

AGENTS.—T. Worthington, of Grass Valley, is our authorized agent to receive subscriptions and advertising for the CALIFORNIA CULTURIST, and receipt for the same.

Also, E. G. Waite, of the *Nevada Journal*, for Nevada and vicinity.

Also, Wm. Bausman, of the *Hydraulic Press*, North San Juan.

Also, Thomas Penny, of Sacramento City, for Sacramento and adjoining counties.

Also, Westley & Wilder, of Columbia, Tuolumne county.

Editors' Repository.

To our Patrons.—At the close of the second volume of the Culturist, we stated that the third volume would be sent to all who had not, or did not immediately order it stopped. A few did so order it, but the number was more than made up by new subscriptions. Almost without exception our former patrons have continued to take the Culturist from their respective post-offices, or from the hands of agents, to the present time. We believe all who have done so are willing to pay for the third volume; but rather than have any misunderstanding of the matter, we propose that, as our terms are four dollars a year in advance, and our subscribers have now received one-quarter of a year's Culturist without having remitted—except in some few instances—the four dollars, which should have been done promptly on the receeipt of the first, or July number, that all who desire the Culturist continued to their address as heretofore, promptly respond by return mail, enclosing four dollars to our address; and such as do not wish to encourage our enterprize further, or, desirous of doing so, find it inconvenient at the moment to remit the amount of four dollars, we desire would be equally prompt in remitting one dollar in gold coin or postage stamps, for the quarter's Culturist already received, and expressly stating whether they wish to continue our patrons longer or not.

There are a few instances in which persons have neglected to pay for the *second* volume. To such, bills are enclosed, to which we also ask special and immediate attention, because in some instances, through the carelessness of our agents, they, our subscribers, may hold receipts for amounts paid that our books do not show. Enclosed you will find bill for the third volume, as a reminder that we desire a prompt remittance, if not in full, then for the quarter's subscription now due, and for which the Culturist has been duly forwarded.

Frontispiece.—We present an engraving of a new implement for pulverizing the soil, Wadsworth's Steam Rotary Digger. The entire of that portion of the machine which constitutes the digger is of iron, and consists of, first, a skeleton cylinder three feet in diameter, and three feet in length, or width; but which can be increased to any length that the general level nature of the ground will admit of. Upon the outer frame-work of the cylinder are attached eighteen rows of spades of four—or more—to the row, making, in the present machine, seventy-two spades, each seven and a half inches in width, and penetrating the ground six and a half inches. The spades are of a curved form, and set at such an angle with the surface of the cylinder as to enter the ground their whole length, at the precise point where they first strike the ground.

On being forced into the ground their whole length by the weight of the machine and engine, their curved shape causes them to rise, as the machine revolves, loaded with earth, though revolving no faster than is caused by its simple traction with the surface of the earth, the same as with the common roller. As the spades rise from the ground, the surface earth to a depth of six inches is lifted, the spaces between the row of spades being full; but as soon as the

raised soil reaches a height of six or eight inches above the surface of the ground, it is forced off the spades by the outward motion of the cleaner, C, which is a section of a cylinder vibrating between every two rows of spades, and acted upon by the lever L, to which it is bolted; the cleaner being of wrought iron, one-fourth of an inch thick, six inches wide, more or less, depending on the distance the rows of spades are apart, and three or more feet in length, depending on the length or width of the cylinder. Motion is given to the levers at each end of the cylinder, by contact with the lug-piece J, which is bolted to the frame, one on each side, and acting simultaneously on the levers, and with beautiful effect.

Behind the digger can be attached any description of seed-sower, harrow or cultivator, to still further pulverize the soil, after it shall have been first dug up by the spade or digger. The manner in which the spade takes hold of the soil is a guaranty of sufficient traction on the part of the propelling wheel or cylinder, equal to the dragging of any additional implement that does not require a power greater than the engine has capacity for. We invite the agriculturalists and mechanics of California to test its principles and capacity for the purpose for which it is intended. W.

S. F. B. D. Agricultural Society.—Our readers will bear in mind that the first fair of the San Francisco Bay District Agricultural Society will be opened at the pavilion of the Mechanics' Institute, in San Francisco, on Wednesday, October 4th, and will be continued for five days, exclusive of Sunday.

The Board of Managers are determined to spare no effort that shall contribute to make their fair *the fair* of the season. Ample accommodations are being provided for stock, and every convenience that shall contribute to their comfort, as well as to the persons having them in charge, will be lavishly provided.

The Pomological Convention of the California Horticultural Society will hold its annual session on some evening during the continuance of the fair. W.

PROCEEDINGS OF THE BOARD OF MANAGERS.

The Board met on Tuesday, at the office of the Secretary. Present—Messrs. Green, Wadsworth, Reynolds, Prentiss, Cumming, Lewelling, Center, Bond, and Fargo.

The minutes of last meeting were read and approved.

Mr. Reynolds, from the committee on preparing the cattle grounds, reported that plans had been matured for the erection of stands, stalls, etc., which, upon motion, were agreed to by the Board.

Mr. J. L. Prentiss was appointed superintendent of the cattle grounds, and was authorized to proceed with the erection of the necessary improvements at the cattle grounds, under the supervision of the building committee.

Mr. Center, from the committee to wait upon the Board of Directors of the Market Street Railroad, reported that it was impossible to get the track completed to the cattle grounds in time for the fair; but it would be to the Willows, which is about a quarter of a mile from the race-track.

Mr. A. H. Myers was appointed superintendent of the pavilion department.

On motion, the Secretary was authorized to procure the necessary badges, tickets, and checks to be used at the fair.

Mr. Silversmith having applied to the Board for permission to publish the *Scientific Press* in the pavilion during the fair, on motion, the petition was granted.

Mr. T. J. Poulterer was appointed auctioneer for the Society, to sell such stock or property as may be offered for sale.

In the matter of premiums for a floral display, on motion, three additional premiums were offered for the second, third, and fourth best displays, and the amounts were fixed at $40, $30, and $20.

Several committees of award were appointed, whose names will not be published until their acceptance is obtained.

A plan for a diploma, submitted by Messrs. Britton & Co., was adopted, and an order made for its completion.

AGRICULTURAL CONVENTION.

The following preamble and resolutions were offered and adopted:

Whereas, The cause of agriculture depends very much for its advancement and proper development upon an interchange of sentiment, and comparison of views, experiences, and practices of those engaged therein—which is greatly facilitated through the instrumentality of the system of fairs and cattle shows, so popular at the present day—therefore,

Resolved, That this Board recommend that a Convention of Agriculturists be held in the city of San Francisco, on Monday, the eighth day of October next, at seven and a half o'clock, for the purpose of devising the best methods of promoting the cause of agriculture, and the adoption of some plan for the better and more acceptable formation of a State Society.

Resolved, That the Agricultural Societies of the State be requested to send each ten delegates to said convention; and that in the agricultural counties where no Societies are formed, the Sheriff, County Judge, Assessor, and County Clerk are hereby requested to appoint ten agriculturists from their respective counties, as delegates to said convention.

Resolved, That the Secretary be instructed to transmit a copy of these resolutions to the various Agricultural Societies of the State, and to the Sheriffs of those counties having no Society organized.

On motion, the Board adjourned, to meet on Tuesday next, at 12 M.

State Agricultural Society.—This Society opens its seventh annual fair in the city of Sacramento, on Wednesday, September 19th, and will continue to the 26th. From information derived from various sources, we think this fair will greatly surpass in extent and interest, any and all previous exhibitions of the Society. The several visiting committees have made their way to all parts of the State, where farms, vineyards, nurseries, and gardens had been entered for premiums, and everywhere the liveliest interest is felt in the success of the approaching fair. At Marysville, during the late district fair, the delegates in attendance from the State Society received notice of, or were applied to for, the reservation of over seventy stalls for the occupation and exhibition of animals from that district alone. Applications have also been made from other districts, that in the aggregate more than quadruple those of any previous fair of the Society. As regards the exhibition at the pavilion, application has been made for more than eight times the space applied for last year; so that in every department a much superior exhibition may confidently be relied upon.

The several district and county fairs, so far as they have been held, have aroused an influence greatly to the interest of the forthcoming State fair; many animals which took premiums at the district and county fairs, will be exhibited at the State fair, thus giving an opportunity to ascertain which are entitled to the sweepstakes; and a most spirited competition is in prospect among the most noted stock-growers of California, as the best animal of one district, and taking the highest premium there, may on comparison prove quite inferior to the best of some other district. It is the bringing together at the State fair the very *cream* of the stock exhibited at the several county and district fairs, that will always possess the State fair with an interest that can never attach to the more local district and county associations.

As a point of location for the State fair, Sacramento is eminently convenient and central, and possesses the most ample hotel accommodations. We predict a success in the forthcoming fair, alike creditable to the agricultural, mechanical, and manufacturing interests of California, and the members and officers of the Society. W.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending July 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By Thos. M. Logan, M. D.

JULY, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	30.115	30.112	30.109	30.115 inches.	+ 0.025 inch.
" Minima.....	29.747	29.710	29.684	29.684 "	— 0.055 "
" Mean.....	29.932	29.909	29.887	29.909 "	— 0.028 "
Thermometer, Maxima.....	76.00	87.00	81.00	87.00 deg.	— 7.30 deg.
" Minima.....	61.00	67.00	61.00	61.00 "	+ 1.53 "
" Mean.....	69.06	78.26	72.19	73.17 "	— 0.30 "
Force of Vapor, Maxima.....	.577	.637	.626	.637 inches.	+ .015 inch.
" " Minima.....	.399	.356	.383	.356 "	+ .021 "
" " Mean	.459	.484	.491	.476 "	+ .013 "
Relative Humidity, Maxima.....	78.00	75.00	75.00	78.00 per ct.	— 9.26 p. ct.
" " Minima.....	56.00	38.00	59.00	38.00 "	+ 9.55 "
" " Mean.....	69.10	55.45	67.48	64.00 "	+ 1.11 "
Number of Clear Days.....	24	24	22	23 1-3 days.	+ 1 1-3 days.
Number of Cloudy and Foggy Days	7	7	9	7 2-3 "	— 1 1-3 "
Number of Rainy Days.....	.....	.....	.. ..	3 "	+ 2 "
Quantity of Clouds.....	0.7	0.6	0.9	0.7	— 0.4
Quantity of Rain and Fog.....	.....	.....	.....	0.549.....	+ 0.475 inch.

1st Days and 2d, Force of										
" " N. Wind..	1	1.0	3	1.0	0	0.0	1 1-3	0.7	0.0	— 0.5
" " N. E. Wind.	1	1.0	0	0.0	0	0.0	1-3	0.3	— 0.0	— 0.1
" " E. Wind....	1	1.0	0	0.0	0	0.0	1-3	0.3	— 0.0	— 0.5
" " S. E. Wind..	3	1.0	0	0.0	0	0.0	1	0.3	— 6	— 1.3
" " S. Wind....	18	1.6	7	2.4	21	1.5	15 1-3	1.8	+ 4 2-3	— 0.4
" " S. W. Wind.	2	2.0	10	1.8	8	1.4	6 2-3	1.7	+ 1-3	— 0.5
" " W. Wind...	5	1.6	9	1.2	2	2.0	5 1-3	1.6	+ 2 2-3	— 2
" " N. W. Wind.	0	0.0	2	1.0	0	0.0	2-3	0.7	— 1 2-3	— 0.3

Thermometrograph.

	Deg.		Deg
Highest Reading by day on the 29th	93 00	Mean of all Highest Readings by day.	78.80
Lowest Reading by night on the 3d	51.00	Mean of all lowest readings by night.....	57.83
Range of Temperature during month.....	42.00	Mean daily range of Temperature during mo..	20.97

Remarks.—Again we have to chronicle a continuance of the extraordinary weather experienced for many months past—rendered still more extraordinary by the fall of heavy rains in the midst of our dry season. By the table above, it will be seen that the temperature is still below the average, and that the moisture in the atmosphere, which caused the heat to be so much felt during the late heated term, was comparatively greater than usual. Instead of a rarified and desiccated condition of the air, a high dew-point has been the rule; and vegetation has been kept fresh and verdant by saturating dews at night. Of the total amount of rain recorded above, 0.545 inches fell, with slight intermissions, from 3h. 30m. p. m. of the 10th, to 2h. p. m. on the 11th. It was attended with some little lightning and thunder; and on the evening of the 10th, at 6h. 30m., the most uncommon spectacle of a rainbow in California during the dry season, was witnessed. The rain at 3h. a. m. of the 17th, was very light, and hardly more than a respectable sprinkle.

On the 4th, another of those Auroral displays, which have been of comparatively frequent occurence of late years, took place. It first revealed itself at about 8h. 30m. p. m., in diffused whitish streaks of light, rising not more than twenty-five degrees above the north-east horizon. Soon shifting due north, and reaching in height almost to Polaris, the phenomenon became more active—brilliant streams and corruscations of diverse light, chiefly crimson, rapidly fluctu-

ating, and converging towards the magnetic meridian. At 9h. p. m., the phasis of maximum splendor was attained, and the light now emitted was sufficient to make the hands of a watch visible. The coronal point was never so definite as to be accurately observed with respect to position, altitude, or time of formation or disappearance. At about 10h. p. m., after being translated to the northeast, the rosy light had faded away—the moon having ascended above the eastern horizon. This is the eighth exhibition of the Aurora Borealis that has been chronicled in California. The first was seen on the 19th of June, 1852, by Dr. H. Gibbons at San Francisco, and G. H. Goddard, Esq., at Sonora. The second was also seen at San Francisco by Dr. Gibbons, on the 19th of February, 1852. The other five were seen and described by us, at Sacramento, on the following dates, viz: Dec. 16th, 1857; Oct. 27th, 1858; Aug. 28th, 1859; Sept. 1st, 1859; and Oct. 18th, 1859.

On the 14th, at 8h. 30m. p. m., a very brilliant meteor was seen to pass across the firmament in a direction nearly from west to east, and about horizontally. The distance traversed was very great before it disappeared, and its brightness lasted twice or thrice as long as a superior rocket. It was also seen at San Francisco and at Marysville.

The comet, of which mention was made in our last month's remarks, has not been seen by us since the 9th inst., when the cloudy and rainy weather set in, which lasted four days, and during which period the heavy rains just referred to occurred. By recent accounts it appears that it was seen by Tuttle, of the Cambridge Observatory, on the 21st of June—one day before it was first seen by us here, and that its elements bear no resemblence to those of any recorded comet.

The Solar eclipse on the 18th, although only partial in this latitude, was not as well observed as it might have been, on account of a heavy bank of cumulo-stratified clouds in the northeast horizon. As the sun rose above the bank at 4h. 53m. a. m., mean solar time at Sacramento, one-third of its diameter, or about four digits of its northern and lower limb was obscured. At 5h. 29m. a. m., the dark body of the moon had passed from between us and the sun, which now shone forth with its disc entire, and in all its glory. During the period of the greatest occultation, the mascular state of the sun's surface was readily discerned with a telescope of the power of one hundred and fifty, and particularly a black irregularly-shaped patch or spot towards the sun's northern and upper edge, surrounded with a penumbral fringe. This spot was seen with the naked eye by several persons. Considering that a circle containing 167,000 square miles is the least space that can be discerned on the sun, as a *visible area*, by the most powerful glasses, the diminution of effulgence, which made these spots so perceptible on this occasion, must have been very great. One hour before sunrise, however, the early dawn seemed as bright as usual, and no star could be caught with the telescope after 4h. 30m. a. m.; consequently the conjunction of the planets was not witnessed here.

Many hypotheses have been advanced respecting these spots of the sun, but the only certain fact, in this connection, is the proof, given by Arago, that its light eminates not from an incandescent solid, but from an *unpolarized* gaseous atmosphere; and, as is well known, Sir William Hershell accounted for the darkened spots by currents of an elastic fluid ascending from the body of the sun, and penetrating this exterior luminous envelope. Professor Henry, of the Smithsonian Institution, was the first to show, by projection on a screen in a dark room, the image of the sun from a telescope with the eye-glass drawn out, that the temperature of the spots was slightly less than that of the other parts of the solar disc. And although experience thus far has not established the fact that the temperature of the earth is affected by the solar spots—whose minima occur in regular periods of nine cycles in a century—nevertheless, the present maximum phasis of these spots may have some connection with the past exceedingly vigorous winter, and continuously cold spring and summer.

Fruit Favors.—Decidedly the best basket of fruit that has passed under our notice the present season, was one we received from those princely fruiterers and general commission merchants, Graves & Williams, of 67, 69, and 71, Merchant street. The pears, peaches, apricots, nectarines, and plums had the peculiar smack of Oak Knoll fruit, with which our city connoisseurs of fine fruit are familiar. The grapes from the grapery of John Parrott, Esq.—formerly Captain Macondray's—were of superior excellence, and attest the skill of an experienced culturist. Graves & Williams have the control and sale of very many of the choicest of California fruit products. W.

Erratum.—On page ninety-one of the August number, in the recipe for "rhubarb pudding," please read two *saucers* of sifted flour, instead of two ounces. Reader.

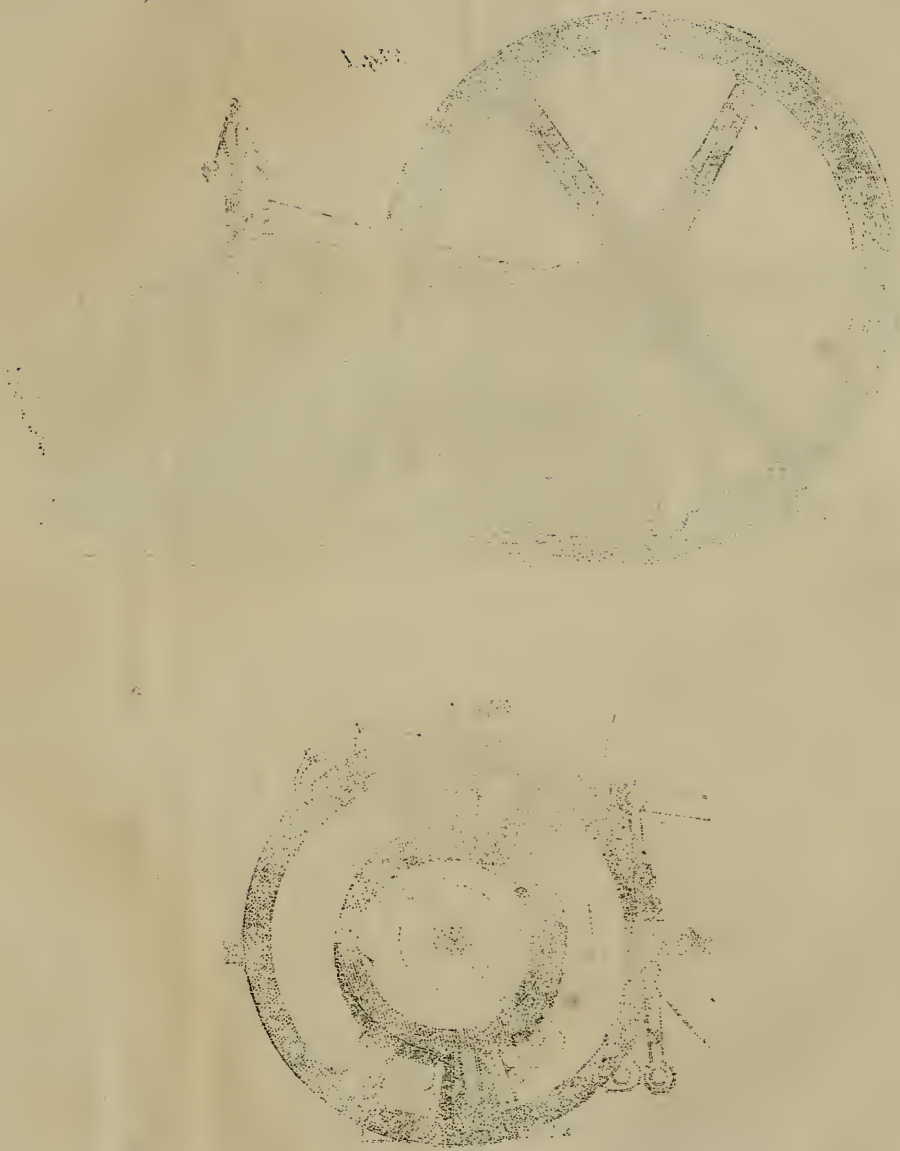


Fig. 1

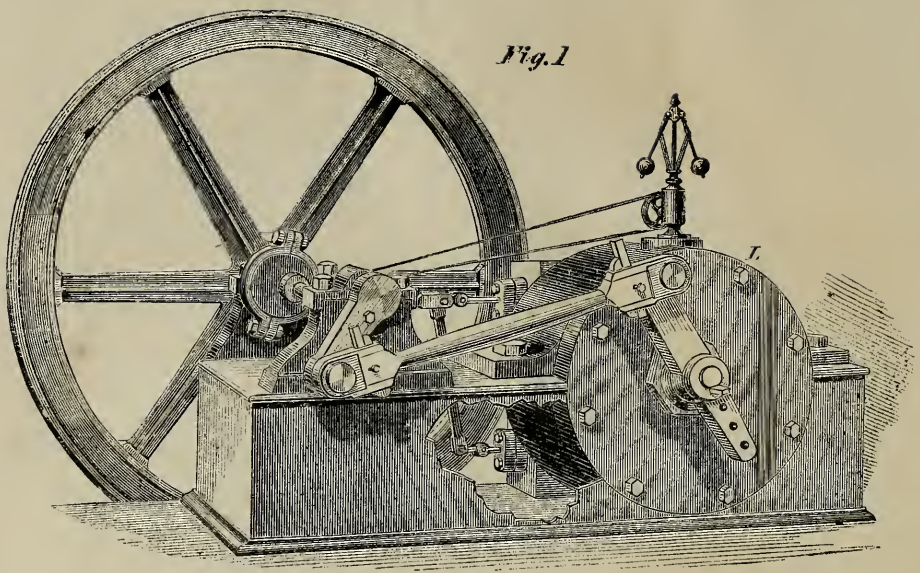
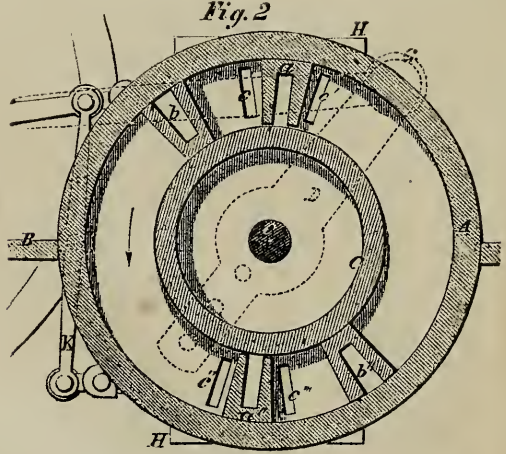


Fig. 2



RUNKEL'S IMPROVED OSCILLATING PISTON ENGINE

THE CALIFORNIA CULTURIST.

OCTOBER, 1860.

CALIFORNIA STATE FAIR.

FOR the seventh time has the California State Agricultural Society held its Fair, and the result has been as heretofore, a decided improvement and success over the fair of the preceding year. Nothing but a rapid development of our agricultural resources, and an untiring zeal on the part of the officers and members of the society to make it what it is, an honor to themselves and to the state, could thus annually render certain a continued and marked improvement. A variety of causes have contributed this year, more than ever before, to render the society prosperous and the fair attractive. A largely increased membership, with the annual aid received from the state treasury—the result of a judicious and intelligent legislation—the countenance and consequent attendance of the masses, and the prudent management of its officers, render the state society in its monetary condition at present—disconnected from the past—one that might well be envied by many older states than ours; whilst the multiplied contributions from twenty-eight counties, more by far than were ever represented before, were the pride of the exhibiters and managing officers, because contributing so much to the pleasure and gratification of visitors.

That we may not be considered partial or one-sided, in thus declaring the late state fair a highly creditable success, we introduce an extract from the *California Farmer*, whose editor, COL. WARREN, with all his hostility to the state society, from a sense of justice—strange to say—has made record of his opinion as follows: "We have attended the fair through the entire time of it. We have examined the articles in the pavilion, as much as our time would admit; have been over the stock grounds, and seen what we acknowledge to be the largest and best show yet made in our state. We visited the race ground, to notice the arrangements there, and having made a

very general review of all the plans and efforts put forth to make it a very successful one, we are ready to accord all due praise to the managers for the most untiring and persevering efforts to make it what it has been, an interesting and successful exhibition, alike creditable to our state and to them.

"The state fair was a success, because by the great increase of new contributions, new products and new inventions, each and all aspiring to public favor, which could only be obtained by public exhibition, these all united to swell the grand amount that was needed to make it a success."

In a publication like the CULTURIST it can hardly be expected that we would devote page after page to a general and minute account of the fair, its progress from beginning to end, or anything like an enumeration of the stock, or articles on exhibition at the pavilion, after the newspapers of the day have given them the usual, general, early publicity. We think it reserved more peculiarly to us, to give to the public in a conservative form, such reports of committees and premium essays, as will be likely to possess a greater interest than the mere speaking of articles on exhibition, which the public to a very great extent, are already by newspaper description or a personal examination made familiar with.

The society offered premiums for the best essays on various subjects connected with the development of our agricultural interests, and among those which received the society's premiums, were two upon the vine and wine-making; and believing they will be read with interest and profit by large numbers of those into whose hands the CULTURIST finds its way, we have procured copies and herewith present them.

W.

PRIZE ESSAY ON THE CULTIVATION OF THE VINE.

BY WILLIAM DANIELS, OF SAN JOSE.

For which was awarded the first premium by a committee of the California State Agricultural Society, at the Annual Exhibition, held in Sacramento, Sept. 27th, 1860.

THE genial climate of California, and the enterprising industry of her population, plainly indicate that the cultivation of the grape will, ere long, become one of the most important branches of Pomological pursuits; and the great magnitude of the subject, when viewed in its present and future bearings on the industrial, domestic, and commercial interests of the people of California, demands that he who writes or speaks in relation to any part of its management, should be well assured of the facts he states, by actual experience; as every idea, or even hint, when once set afloat in the community, will exert an influence (either for good or evil) on the peculiarly inquisitive action of our enterprising population.

My own natural diffidence and lack of confidence in my ability to write anything for the public eye, would have deterred me from this attempt, had it not been for a sense of duty, and the solicitations of many of my friends and fellow-workers in the

vineyard, who have been, like me, sedulously engaged during the last ten years in developing the horticultural and pomological resources of our adopted country.

And allow me to premise in the outset, (and in this I believe almost every practical pomologist will concur) that there is scarcely a fruit-bearing tree, vine, or plant, or even an ornamental tree, shrub, vine, plant, or flower, more susceptible of appreciating good or bad treatment, or that will respond more quickly to the smile or frown of the cultivator.

The climate suitable for the cultivation of the grape vine, may be said to range from the twenty-first to the fifty-first degree, north latitude, governed more or less by meteorological and other local characteristics. Evenness of temperature is a very great desideratum; the nearer the average approaches to seventy degrees in the summer, and forty degrees in the winter, the better. Any very great deviation from this, especially if it takes place suddenly, will be attended with injurious results. The aspect of the vineyard, the quality and cultivation of the soil, the pruning and training of the vines, will, if properly attended to, ameliorate greatly the deleterious effects of those sudden adverse changes in the atmosphere.

Aspect, that is, the general inclination of the ground, the relative situation of trees, buildings, fences, or other natural or artificial shelters, will produce a very decided effect in the vigor and health of the vines, and also in the abundance, richness, and early maturity of the fruit. Experience shows that a gentle slope to the southwest is decidedly the best aspect for the grape vine, and on the east, north, and northwest, protection, either natural or artificial, would be a great advantage, at any rate, where late spring frosts prevail, an eastern aspect should always be avoided. Under the clear skies of California, a western aspect, receiving the heat from the sun, even to his latest evening rays, retains its warmth through the greater part of the night, and by the time the eastern slope is frosted all over, and the first bright rays of the rising sun strike directly on the glistening foliage, scorching it like a blaze of fire, the same bright luminary is warming the atmosphere directly over the western slope, and oftentimes causing a very light fog, which completely draws out the frost before the sun shines directly on it. In choosing a site for a vineyard, therefore, the general aspect of the ground, together with shelters or protection, either natural or artificial, should be carefully considered.

The character and preparation of the soil is also of very great importance, before the vineyard is planted. I say *before*, because if it is not thoroughly prepared before planting, it cannot be done afterwards; and no extra care in any part of the management of a vineyard can ever compensate for such neglect. The soil should be rich, free, and warm, to the depth of at least eighteen inches, and whenever a cold, stiff subsoil underlies it, should be thoroughly underdrained; and almost any soil in California can be so prepared, and there are very few locations of any extent so entirely prepared by nature. A wet, cold subsoil will act as poison to the grape vine, and although a rank growth of vines, and a heavy crop of grapes may be raised on a stiff, heavy soil, they will surely be deficient in those rich wine producing qualities, without which a first quality wine cannot be manufactured.

In laying out a vineyard, the rows should be at least four feet apart, running nearly north and south, and six feet apart in the rows. This will give about eighteen hundred vines to the acre. The most certain course to secure an even start of all the vines, so as not to have a number of gaps to fill out in after years, is, to prepare cuttings of well matured wood of the last summer's growth—a small heel of old wood at the lower end will be no disadvantage. Each cutting should have three joints or buds well matured; cut square off close below the lower point, and leave an inch of blank wood above the uppermost bud; cut slanting towards the side the bud is on. The cuttings should be prepared in the fall, and placed at least half their length in moist sand or mud, in a shaded place. The wood of the grape vine being very porous, will imbibe twice its weight in water, in which state they should be set out in the vineyard some time in January; setting two cuttings in a place, nearly touching each other at the bottom, and sloping a little from each other at the top, lengthwise with the rows, setting the two lower buds entirely below, so as to leave the top bud just above the surface of the ground, taking care that the dirt is pressed firmly on the lower joint. By this means but few of those unsightly gaps will appear next year; and if a few should show themselves, they can be easily filled out from those where two have grown, and wherever both have grown, and are not wanted, remove the weakest, and thus leave the vineyard evenly set out all over. Cuttings are to be preferred to rooted vines, because, first, they can be procured for less than one-fourth the cost; second, they can be planted properly at one-third the expense; and thirdly, (which is of great importance) the roots take their natural course in the soil, and are never disturbed, the grape vines being mostly raised from cuttings, send out roots, horizontally, in every direction, and to a very great distance from the stem; and in taking up rooted vines for removal, very few of the roots will escape mutillation, besides being often exposed to a cold, dry atmosphere in removing, which is very injurious to the vine; and in three years from setting out, (which is quite as soon as a vine ought to be allowed to bear fruit) the vineyard set out with cuttings will, with proper care, be fully equal to one set out with rooted vines.

The next great point of importance is, pruning and training. A man going into a vineyard, knife in hand, without knowing how to prune, what to prune, and when to prune, will often commit (unwittingly) many grievous errors, for which the poor vines have to suffer. There are many ways of "cutting up" a vine, and almost every man has some peculiar system of his own, differing in some respects from others; but almost all agree that at the winter or fall pruning, the vine should be pretty well cut to pieces, any how. I will state my plan, and adduce some arguments in favor of its adoption—always bearing in mind that whenever the knife or shears are used, they should be used rightly. In pruning and training, the object should be, to produce abundant successive crops of the richest fruit coming early to perfect maturity, and at the same time maintain the vine in a healthy, vigorous growth of wood. No summer pruning will be needed during the two first seasons. The fall pruning should take place in October or November, or as soon as most of the large leaves have fallen. The whole of the current year's shoots should be cut away, except the first

bud from the main stem. Encourage all the growth of leaves and shoots you can through the first two summers, as the more leaves the more roots, and the first requisite is a plenty of strong, healthy roots.

In the third spring from setting out, if the vines have grown well the two previous seasons, and the stem two inches above the ground measures three inches or more in circumference, let all the buds about the stem grow, till some of the shoots are six or eight inches long; then select the two strongest, taking care to have them on opposite sides of the main stem, and as nearly in a line with the rows as possible. Take out cleanly all other shoots from the main stem, or any that may push from it through the summer. Train these two shoots in opposite directions, lengthwise with the rows; encourage them to grow all you can, pinching off the laterals on them as soon as they have shown the second joint, leaving one leaf and bud on each lateral, to secure the bud on the main from bursting, which might endanger its fruiting next year. These small buds left on the laterals may start again; if they do, they should be pinched again in like manner. If these laterals are allowed to grow till their wood gets hard, they rob the main shoot of a portion of its strength, which it will need next year to sustain its crop of fruit; and no full grown leaf on a grape vine should ever be destroyed or injured. It is a good plan to set a small stake on either side, and near the stem, to which these main shoots may be tied six or eight inches high, training them along in opposite directions, exposing them as much as possible to the light, that the buds and wood may be well matured. The vines will need some attention as often as once a week all the summer.

At the next fall pruning, which should be performed in October, or early in November, these two shoots will have at least twenty large well matured buds each, without counting the three first nearest the stem; these shoots may now be cut back to ten buds, beginning to count with the fourth bud from the stem,—the first three from the stem should never be allowed to bear fruit, as they are small and imperfect, being formed so early in the season, and if allowed to bear would produce small imperfect bunches; the other ten buds on each cane, after removing all the lateral spurs, should remain as they are till early in the spring, then one-half of them should be cut clean out with a sharp knife, taking care to leave five on each arm, so situated as not to be too near each other, and evenly distributed along the cane in the most suitable position, and no bud should be allowed to grow on the under side of the cane. The five buds now remaining, will most likely show as they open, at least two bunches each; as soon as these bunches are well developed and it can be clearly seen which is the largest and most compact, pinch out the smallest and most unsightly, leaving only five bunches well distributed along each arm. This will be quite enough for a vine measuring four inches in circumference at the stem just above the ground. The new shoots, with the bunches on them, should be stopped at the second or third joint beyond the outermost bunch as soon as they have attained that length, and the three first buds on each cane nearest the main stem above alluded to, should be left till they have pushed a few inches, then the one best situated on each cane should be selected to become a fruit-bearing cane for next year, all the others should be taken

clean out. These two new shoots should be trained and pruned in the same manner as the others were last year,—trained either way along the rows directly above the fruit-bearing canes, not only that they may be in the best position to receive the maturing influence of the sun's bright rays, but to act as a partial shelter to the growing fruit, which should always be protected by the foliage from cold, drying winds, and from the direct rays of the mid-day sun. These two new shoots must be removed every year, and care should be taken to get them to start as near home (that is back towards the main stem) as possible, so as to avoid the accumulation of old wood on the vine. At the next fall pruning, the canes that have just borne a crop of fruit should be cut close back, as near to the main stem as possible, so as not to injure the new cane reserved as a fruit-bearing cane for next year.

These new canes may be managed in all respects as the others were last year, only as the vine grows stronger and larger in root and stem, an additional bearing bud may be left on each bearing cane, but great care is necessary never to let the vine overbear, and if at any time a doubt remains as to the removal of a bunch, give the vine the benefit of the doubt, and it at once, and thus divide the fruit-bearing properties of the vine amongst the remaining bunches. *It is better to have the same weight of fruit in twelve bunches than in twenty*, remembering that it is the ripening of the seeds that draws so heavily on the vital resources of the vine, and small berries, if perfectly formed, will have on an average as many seeds as larger ones; all the increase therefore in size of berry, is an increase of rich, juicy pulp, and we should be careful not to imitate the old lady who killed the goose that laid the golden eggs.

It will be easily seen that this system of management has many advantages over what is called the "spur pruning plan." First, it prevents the rapid accumulation of old wood, which on the spur system must go on increasing every year till it becomes a huge unsightly mass of old, dry, callous knots and cuts, standing between the roots and the fruit-bearing branches, obstructing the free passage of the sap, both in its upward and downward course, and of no manner of use whatever, and must eventually raise the fruit-bearing portion of the vine so far from the ground, as to expose the fruit more and more to the cold dry winds so prevalent in many parts of California, and which is so very injurious to the grape vine. The bunches of fruit are formed *only* on wood of last year's growth, and they should never be raised higher than just to keep the fruit clear off the ground. A well cultivated soil is always warmer of nights than the atmosphere above it, and a bunch hanging a few inches higher than another on the same vine, will often be weeks later in maturing and never be so fine; and a bunch hanging near the ground and shaded by a few of its own broad quivering leaves, will be in the best position during the hottest part of the long bright days of summer; as the ground will emit a gaseous sort of moisture very congenial to the fruit, and which is perhaps in this dry climate the best preventative of mildew from which grape vines, peach trees, apple trees, and indeed almost all kinds of fruit trees often suffer, and which is without doubt the greatest scourge to which the grape vine can be subjected. To prevent this disease should be the aim of the cultivator.

It is but little use to talk of a remedy or cure, for when the mildew once strikes a grape vine, either on the fruit or leaves, its effects will show itself to a certain extent through the whole season. I have tried many remedies; the best I have ever known is to sprinkle the whole of the foliage and branches thoroughly with clear water,—make the whole of the vine thoroughly wet of a still morning or evening, but do not irrigate the ground for it—the moisture is needed on the foliage not on the roots, but though this will cure it for the present, if the vine is exposed to cold drying winds, it will soon be there again, and you may kill it by sprinkling sulphur or drive it away by any means whatever, it will still come again till the cause is removed, and so sure as it strikes the fruit, it will leave an indelible mark or scab which can never be obliterated. I have said thus much in relation to this disease, because in all grape growing countries it has proved the most formidable enemy the vine dresser has had to contend with, and because I believe the system of management here recommended is so well calculated to avoid its direful effects. All other diseases to which the vine is subject are as nothing in comparison, and indeed they spring mostly from the same causes and may mostly be avoided in the same manner.

The soil should be kept clean and loose on the surface, but no deep plowing should be done on it after the first year. A top dressing of well decomposed manure as often at least as once in two years, should be applied just after the fall pruning, the winter rains will then take down its fertilizing properties just to where the roots can find them, and the whole may be worked in with a light cultivator in the spring. The ground should never be worked while it rains, or is wet enough to pack, and be left at the last working in as light and free a condition as possible.

The fall pruning should never be deferred later than October or early in November, for if a sharp frost strikes the young immature out-ends of the shoots, the ends so running in them will be poisoned, destroying the life of the wood a long way back towards the stem, making it entirely unfit for cuttings or for bearing fruit.

I fear I shall tire the patience of the committee if I write any more. A thousand circumstances might be alluded to in connection with the cultivation of the grape vine, but to say more at present would swell this essay to an unreasonable length. I have endeavored to make the matter as plain and simple as I could. I hope it will be understood, and that industry and talent will be more and more thoroughly applied to the cultivation of one of the richest fruits in the gift of a munificent Creator.

THE POTATO WORM IN KLAMATH.—We learn that in some portions of the county considerable destruction among the vegetables has been caused by a worm, said to be what is called the "army worm." On Elk River, whole fields of potatoes have been stripped so as to leave the ground perfectly bare. Some damage has also been done by these little destroyers, on the bottom near Arcata, but not to any great extent.—*Humboldt Times.*

PRIZE ESSAY ON THE CULTIVATION OF THE VINE.

BY WILSON FLINT, OF SACRAMENTO.

For which was awarded the second premium by a committee of the California State Agricultural Society, at the Annual Exhibition, held in Sacramento, Sept. 27th, 1860.

CULTURE OF THE VINE.

THE first thing to be done in vine culture, is the selection of a suitable vineyard site. The chief requisites of a good vineyard, are a red calcareous gravelly soil, so elevated above marshes and bogs that it will escape the late frosts of spring and the early ones of fall. It should also be out of the sweep of the cool winds and fogs of the ocean, and in a locality where the grapes will ripen thoroughly before the rainy season sets in, so that wine making can be got through with in dry weather.

Land on which to plant the vine should be of considerable depth, and if underlaid by rotten slate stone, or marl, so much the better, as each of those materials afford an ample supply of moisture for the vine without artificial irrigation.

A vineyard site with considerable slope, but not so much as to impede the use of horse labor in its cultivation, is desirable, because such are never unduly drenched with rain, nor so much exposed to the severity of wind storms as are level situations. Deep soils, when composed of proper materials, will be found to give greater quantity, without loss of quality in wines made from them, and, of course, at less expense, and with more certainty of an annual crop.

If the object of the vine dresser is to raise grapes for the dessert, then he may select rather moist alluvial lands, as on these there will be produced a greater number of pounds, and of a larger, more showy description; but if his intention is to make wine, he will be wise to plant his vines on rather dry, chalky, volcanic soils; as grapes raised on these lands will possess more aroma, and richer and more highly elaborated vinous qualities; whereas, if grown on clay lands, or alluvial bottoms, they impart to the wine a muddy, disagreeable flavor.

PLANTING THE VINEYARD.

The land should be thoroughly plowed to a depth of fifteen or twenty inches, and afterwards harrowed, so that the surface is smooth. Then mark off the rows at right angles, either at six or eight feet apart, and where the rows cross each other, dig holes not less than two feet in diameter, and of equal depth, throwing the earth back, so that the hole is nearly full before planting the vine. Cuttings which had been taken from the vine in November or December, and buried in the earth until March, may at the latter time be planted in the holes, being careful to press the earth firmly about their lower ends, leaving the upper part just on a level with the surface. If the land is full of moisture, a good proportion of such cuttings will strike root; but it is not as safe a mode of planting a vineyard as with plants which had been rooted in nursery the year previous.

Rooted vines designed for planting out, should be taken up from the nursery before

the warm days of February, so that their buds are not swollen. On being taken out of the nursery, they may have their tops shortened back to within one bud of the old cane, and the roots pruned at the same time, when they can be heeled in ready for planting out, which is best to be done either in December or March. Where there are more than one set of roots, it is best to prune the lower ones nearly back to the cane, as this induces, afterwards, a tap-like tendency. The upper or surface roots may be left longer, and spread out, so as to reach beyond the lower ones before they delve downwards. This practice, it will be observed, prevents the roots from interfering with each other.

The best soil for the nursery, is a moist rich loam, as vines with soft spongy roots succeed much better when planted out in dry vineyard land than those raised on dry situations—the theory being, that the more sponge-like roots have greater capacity to extract moisture from the sorrunding soil, so as to supply the increasing demands of the expanding foilage.

Layers made from the previous or present year's wood are quite as desirable to plant in vineyard, as they come into bearing fully one year sooner than rooted vines, and two years before cuttings.

During the first summer no pruning will be required, and the only care the vineyard will need, is to keep the land in a good state of cultivation, so that it will retain moisture. This, also, exterminates the weeds. If the vines shall have made but a few inches growth, it is best not to irrigate them, as it is better that they establish themselves than to be unduly stimulated and pampered with water when young. Where they shirk for themselves the wood will be short-jointed and firm, desirable qualities in the vine.

PRUNING THE VINE.

If the vine has made a large growth, it may be pruned back to ten or twelve inches of the ground the first winter after; if not, it should be cut back to one eye of the old wood, so as to stimulate a stronger growth the ensuing season. Much difference of opinion exists with regard to the best mode of training the vine; yet all agree on one point, and that is—our climate being entirely different from that of Europe and the Atlantic States, it is reasonable to infer that we must practice a different mode of training the grape. Thus where they are subject to heavy and protracted rains, with alternate spells of glowing heat and sunshine, the fruit requires ventilation, else it mildews and rots on the vine. Here where there is constant sunshine through the day, and a dry atmosphere at all times, there need be none of the precautions of high staking and open pruning to guard against these enemies of the grape. Indeed, a true philosophy would teach us to adopt a reverse practice.

In our vine treatment we have to prune so as to provide against only two difficulties; the first, intensely hot days, denominated heated terms, and cool nights—both of which pervade all over the state.

Where the vines are tied up to a stake with a single stem, forming its head some distance from the ground, the surface becomes intensely hot and reflects an ascending heat, which scorches the grapes while in the stoning process. This high training

also exposes them to the chilling influence of our cold night air, which greatly retards their ripening.

After years of experiment, the writer finds that the best mode of training the grape vine in California, is to form the heads of the vines from six to twelve inches of the ground, allowing a greater number of branches to grow as they attain age. It will be seen that this plan saves the cost of stakes, and the labor of tying up the vines. But its greatest advantages are, that this low or horizontal training induces a more equal distribution of the sap, so that the buds break equally strong their entire length, and the foliage shelters the grapes from the scorching sun, and affords a blanket at night to keep the warmth of the earth around the grapes. The vines, also, by spreading out over the land near the surface, act as a sort of mulching, which greatly aids in the retention of moisture.

A marked difference can be observed in the size, flavor and time of ripening of grapes of the same sorts when trained, high or low; as those produced near the ground under the shelter of ample foliage, will be ripe two weeks earlier, and of far higher flavor, as there is no interruption in the elaboration of the leaf juices which become their dewy nectar, as the leaves near the surface are not chilled, while those exposed to the circulation of the cold night air, receive periodical checks, which cannot but result unfavorably to the fruit.

Much injury is done the vine by injudicious summer pruning, as it checks the swelling of the grapes until new foliage has grown out. It must be kept in mind that the grape gets most of its food from the vine leaf, therefore as this is despoiled, the grape proportionably suffers. Then the devoiding the vine of its foliage hazards the fruit to the danger of sun scald. If the vine has been planted in proper soil and not unduly stimulated by irrigation, it will make no more growth than the demands of the swelling grapes upon its foliage require; but if on moist rich soil, or excessively irrigated, the canes will be long jointed, with poorly developed buds, for the succeeding year's fruit-bearing. This defect can be remedied to some extent by what is called pinching in. This may be performed at any time while the vine is in a growing condition, and is accomplished in this wise. Take the soft succulent end of the shoots between the end of the thumb and forefinger, closing the nails together with a quick motion, when the vine will snap off. Breaking the vine where it is succulent, allows the sap to flow towards the end of the vine for some time, all the while becoming gradually stopped in its course, which has the effect of forcing portions of it into the buds near the old wood. These buds are the ones to become bearing shoots, and are by this process strengthened and enlarged in consequence of the ascending sap thrown back upon them, by the stoppage of its flow upward caused by pinching.

If the vine had been shortened by pruning, the knife would naturally strike where the wood had become hardened, and the amputation being in the vicinity of the matured buds, these would receive the upward flow of sap, and break at once into wood branches, thus continuing the scarcely interrupted action of the sap vessels.

CULTIVATION AND IRRIGATION.

An important consideration in the management of the vine is, that the ground should not be distributed in the vineyard after the leaves have expanded while it rains, or there is a dew on the foliage, as the raising of the dust at such times closes the valves of the leaves and stops respiration.

Avenues should be left at convenient distances through large vineyards, so as to afford turning places for the teams used in the cultivation, and also for roads through which wagons can pass to haul the grapes from different parts of the vineyard to the wine press. The growing of crops of corn or vegetables in young vineyards, is a reprehensible practice, as it exhausts the moisture required for the vine and introduces myriads of insects, which deposit their larvæ on the vines as they remain green, after the vegetables have dried up, and consequently are the natural refuge for them when driven from their first habitation.

The practice of planting live willow fences around vineyards is one that should be equally discouraged. The willow is the prolific habitation of the cut worm, and numberless tribes of creeping and vineyard insects, all detrimental to the vine. On examining the leaves of willow and cottonwood trees, there may be discovered great quantities of small balls growing upon the foliage. These balls all have more or less larvæ enclosed, or moths incubated and in progress of escape.

On first planting a vineyard, impatient desire is apt to demand a forced growth by the free application of water and manures. Where this is indulged, it will be at the after cost of the vineyard. The great desideratum in all vine culture, is to first get a well established stocky plant, with short jointed matured canes. A vineyard established and brought to bearing age without summer irrigation, can afterwards, when loaded with exhausting crops of fruit, receive copious supplies of water with more impunity than a vineyard always accustomed to it. But irrigation should be used with great caution even on a bearing vineyard, and when applied should be run through a deep furrow half way between the rows of vines, and never allowed to get under a bearing plant, particularly after the blossoms have set and while the grape is in the stoning process, as during this period there is danger of mildew if an excess of moisture is about the vine.

The annual prunings, stems and lees of the grapes should all be returned to the soil, and worked in so that they will rot and keep up the fertility of the land, and above all there needs be as scrupulous a cleanliness in the cultivation of the vine as in the manufacture of the fruit into wine, as the disagreeable odor of many kinds of weeds will affect the grapes, if allowed to grow in contact.

If the vineyard is on a locality subject to late spring frosts, the pruning may be delayed until the danger of frost is over. The ends of the vines will start, but the buds designed to bear fruit, will remain dormant until pruned back to proper distances, when they will break with great vigor and effectiveness.

THE PATENT OFFICE.

THE editor of the *Wisconsin Farmer* treats his readers to the following interesting description of one of our national institutions at Washington, which we appropriate:

"This is an institution of which, doubtless, our readers have heard more or less, but one which all of them may not have seen. Having spent considerable time in and about it during our recent visit to Washington, we propose to detail a few items that may prove interesting.

"The Patent Office Building is a vast and elegant structure of white marble, covering an entire block, with some slight exceptions in the way of out grounds; it is three stories high, and almost wholly devoted to patent purposes. The lower stories are occupied by the various officers connected therewith in the way of Examiners. There are over twenty—each of whom has some particular class of subjects assigned to him and his department, and has more or less associates to aid him, as circumstances may require; thus constituting separate and independent tribunals, each for his department. Thus systematized, after years of experience, they do, or ought to, become very skillful in examining new models, and determining upon their originality, usefulness, and patentable merits. The examiners are generally elderly men, and are not often changed with changing administrations; they are regarded, as in truth they are, as courts mechanical, where things, instead of persons, are tried and adjudged.

"In the same neighborhood are the record rooms, where every patent issued is recorded, and where all assignments and sales of them are also recorded, the same as lands are in counties. These record books are free to the inspection of all, without price. Adjoining is the drafting room, where all drafts of everything patented are kept, each class or kind in portfolios; and any particular one you enquire for will be furnished you for examination. A throng are often in these rooms, examining the patent records and drafts. No one is allowed to copy them but the regular clerks, who will do so to any extent desired, for proper fees.

"But by far the most interesting portion of the office is yet to be referred to, and that is, the third or upper story, where the models are arranged and kept. It is one, or rather three vast halls, connected in the front and the two wings, and in these halls are arranged a multitude of tall cases, with glass doors, and enclosing all around them, so as to admit of everything being seen within them. In these cases all of the models are arranged and labeled, with the name of the machine, the patentee, and the date of the patent. For instance, one contains the models of all the reapers and their improvements, on which patents have been granted, (and their name is legion). The next contains the plow family, not less numerous, and so forth, and so on, without end. Such a wilderness of models as no one can imagine without seeing them —and as no one can understand without years of examination and study. It seems incredible that so much *whittling* could have been done by the restless Yankee in the few years since they have been collecting.

"The rural genius who often thinks he is inventing something new, because different from what he has seen, might, in not a few instances, save his labor and his money, in trying for a patent, if he could but examine the labors of those who have gone before him in the same department of invention.

"In the west wing of the halls are the models of applications which have been rejected, and these, too, are really numerous. This whole vast collection of models is, perhaps, the greatest display of both ingenuity and folly combined, that exists under any one roof under the sun; it is the great demonstrative school of American ingenuity, and should, as far as possible, be studied by all who would be first class inventive mechanics.

"Persons wishing to examine any model or class of models, are, on application to the superintendent of the hall, furnished with an attendant, who takes them to the particular case, unlocks it, and stands by them until their examination is completed, without words, money, or price, whether the time consumed is long or short. Thus no one is permitted to touch a model, except under the eye of an attendant. All proper, of course.

"All in all, the Patent Office is a great institution, and, so far as we could see, generally well systematized and managed. That it is doing more than any other institution in the way of working out American character and progress, we have no doubt. Not but what we are aware that it is developing a great deal of chaff, but among it there is a great deal of good wheat, of quality that cannot be estimated at too high a value. Blot out the inventions and improvements upon the steam engine, the reaper, the printing press, telegraph, and the sewing machine, and countless other almost equally important matters, for the last twenty years, and where should we be? No where, in our own estimation, for a while at least. Few of the rushing multitudes of this fast age stop to realize how much they owe to mechanical invention and ingenuity, or how much of this is attributable to the encouragement and protection of the Patent Office.

"We think its vast business has rather outgrown its original plan and organization, and that important modifications and improvements are called for in some of its practices and operations, and if so, they will not long escape the remodeling and progressive spirit of the times."

THE DEAD LETTER OFFICE.

ONE in rambling through the long halls and multitudinous departments of the General Post Office, at Washington, may chance, as we did, to stumble upon the Dead Letter Office, and if so, they will feel interested to look in for a few moments, to witness the wholesale slaughter of letters that are constantly gathering there from unknown owners.

At long ranges of tables sit from a dozen to twenty clerks, each with a bushel or two of letters before him, in a promiscuous heap, which he is hastily tearing open,

carefully and quickly examining, to see if they contain any money or valuables, and if none, they are cast beneath his feet like husks of corn. No time is taken to read them, or a word of them, but simply with a glance of the eye to detect money or drafts—in which case they are thrown into another heap, to be returned to their owners; while the mere letters and envelopes are gathered up from the floor in large baskets, and sent away to the burning furnace, an institution made on purpose, and in which all *dead* letters mingle in one common volume of fire and smoke, no matter whether their contents be of joy or sorrow, business or love, the fire consumes them just as readily, and only a small pile of ashes remain; typical, perhaps, of the sorting, saving a few, and burning the many, of all humanity, at the great day we read of. Who knows?

While contemplating this rapid sort of corn shucking among the letters, one of the clerks standing near handed us a big handful of valentines, which he had thrown one side, instead of into the common pile for burning, saying, "Give them to your children; they will amuse them." Thus we became possessed of ample stores of love and folly, to move mirth or melancholy.

We do not believe that this system of dead letter slaughter will last always. It strikes us that there might be some better way of returning uncalled-for letters to those who write them. Time will tell.—*Wisconsin Farmer.*

THOSE ITALIAN BEES.

As there is some public curiosity just now in relation to this lately introduced species of the Honey Bee, we make the following extracts to show the claims of those who offer them to the public, from a work just published at London, by H. C. Hermann of the Canton Granbunden, Switzerland. He calls them the "Italian Alp-Bee," and says they "are only to be found in the most perfect condition on the borders of Graubunden, in the Veltlin and Tessin, and that the farther one goes from the Alps, the less handsome they are found." They thrive "up to the height of 4,500 feet above the level of the sea, and appear to prefer the northern clime to the warmer," for in the south of Italy they are not found.

In character our author depicts them as a singularly *lovely* as well as industrious race—"extremely tender, amiable little creatures, and a bee-protector is not necessary with them, as, unprovoked, they never sting, least of all their own master." So that they are "the ideal of every lover of bees," and whoever has them "will love them so much that he will give his best attention to their augmentation." But to proceed to his description:

"The Italian yellow bee differs from the common black bee in its longer, slender form, and light chrome yellow color, with light brimstone colored wings, and two orange-red girths, each one-sixth of an inch wide. Working bees as well as drones have this mark. The drones are further distinguished by the girths being scolloped,

like the spotted water-serpent, and obtain an astonishing size; almost half as corpulent again as the black drone.

"Where the home of the Italian bee is, by far the greater number of queens are dark, almost chestnut-brown, and, for all that, there is no difference in the color of the working bees, whether they be produced by a light or a dark-colored queen. All Italian Alp-bees have the same distinctive mark, that is, the two orange-red girths, no matter whether dark or light, and a dark queen will just as well produce light ones, as a light one produces dark queens, and the color has therefore not the least influence on the race, but solely the marks of distinction. These bees are almost transparent when the sun shines on them. The cells of the Italian bees are considerably deeper and broader than those of the black bees. Fifteen cells of the Italians are as broad as sixteen cells of the black kind. The exhalation of an Italian bee-hive is pungent, and easy to be distinguished from a German hive. If a piece of honey is anywhere about, the Italians are sure to be the first to find it out. Long before the black bees fly out, the Italians come, and are industrious until late in autumn, when the black bees have long ceased to work. Everywhere they scent the honey first, and are therefore the first to discover a weak neighboring hive and to rob them of their stores.

"It is seldom known that an Italian hive will harbor German bees, for the Italians resist an attack much more courageously, and know how to keep their house clear. On the other hand, after a few weeks, Italian bees will be observed to march in and out of German hives, just as if they were quite at home; such is the case if there is only one Italian hive on the stand. The cause is easily explained. The Italians belong to the long-fingered craft, and creep into other hives, probably to look after the stores; then they begin to like the place, and they stop, joining the black people."—*Country Gentleman.*

MANAGEMENT OF THE APIARY FOR OCTOBER.

BY J. S. HARBISON.

AS soon as the weather becomes cool, contract the entrance to the hive, so that no more room is left than affords a free passage for the bees out and in. This will guard against the intrusion of robbers and other enemies.

Such hives as are light, should now be fed enough to last them until the return of spring.

Hives which have enough provisions to last them through the winter, should not be fed till in the spring, at which time they should be fed a small amount at regular intervals till flowers are in bloom. Although they may not need such assistance, yet when judiciously supplied it stimulates them to greater industry, thereby making them yield a greater profit to their owner.

The sun may be permitted to shine on the sides of the hives, to give additional warmth to the bees.

The roof, as covering, should be placed directly on top of the hives, and the whole safely secured against being blown over by high winds. These covers are to remain thus till the return of warm weather the following year, at which time they are to be again elevated a sufficient distance above the hives to afford a free circulation of air.

SACRAMENTO, September, 1860.

CHIT CHAT.—No. 2.

"AUNT BETSEY, will you please to tell me now how I am to manage the butter in winter, for I like to understand what I am about; and, O, I must tell you that my butter was so hard and nice. Father thinks he would like to take a few pounds to town when he goes; that is if I succeed as well next time. I did not think," added Susy, "that I could ever make butter fit to sell, but I am so glad, for it will help us a good deal, and if—" here Susy hesitated and blushed.

"Well, child, what is it you would say?" Is it something very important?"

"Father thinks if he could take a few pounds every week, he could take the CULTURIST; is not that something important?"

"Yes, indeed, though I am always willing to lend you mine; still it is better to have a copy of your own to refer to when you wish; but come, I must tell you about the butter, and how to put it up, if you are going to send it to market."

"That is just what I was going to ask you, only it seemed like asking too much."

"Now, Susy, to begin; did you notice the temperature of your cream after leaving it out of doors all night, as I told you?"

"Yes ma'm, I tried it with my finger, and think I can remember what will be right another time. It was not warm, and yet had not the least chill to it."

"That is right; now you must observe as the nights become colder, you must leave your cream pot in the cellar, and as the winter advances, remove it into the coolest corner of your kitchen; do not forget to see that a clean towel is always spread upon the top before you set the cover on. Well, as the cold increases, try and remember the night before you wish to churn, to place the cream jar near the fire—not too near; but as you have a fire place, it is a good plan to put it on the hearth, cover up the most of the fire with ashes previous to retiring, and in the morning turn the pot round often until your churn is ready for it." "I know," continued Aunt Betsey, "that is the plan I adopted last winter, and I had little or no trouble."

"Some people use thermometers, do they not?"

"Yes, but there are a much larger number of people who do not use them, for the simple reason they think they cannot afford it, and I really think you will do very well if you take a little pains. Another thing, some people may tell you that you should put hot water or cold water into your churn to collect the butter. I never could see the least use of doing so, but I can see harm, for those who insist on using it will have very light colored or very crumbly butter, and no one will make me be-

lieve that water should touch it all. The butter is of a richer color, is hard and firm without it, and you are not troubled with white spots all through it; then why use it? If you remember to keep your pans perfectly clean and bright, let your milk stand just long enough to rise all the cream, but do not forget that as soon as the milk is sour, you may know that the cream is nearly or all at the top, and I think it soon begins to lose its sweet, rich taste. I have heard some say that more butter could be made if it stood longer, but I had rather have less and be sure it is good. Another thing; every time you skim, be sure and stir up the cream in your cream pot, it will do much better then. If you observe these directions, you never need have poor butter, unless the cows feed on some poor weeds or bitter herbs.

"There is one thing I would caution you further about. Every spring there is a large quantity of the wild garlic or onion grows in many parts of the mountains, and if the cows are allowed to roam a good deal, they will eat it; but I watch the milk, and if I find it tastes of it, keep the cows up a week or two, or else stop butter making till the other feed is started well, but two weeks is the longest time I have ever been at all troubled with that."

"Thank you, Aunt Betsey, I will be sure to tell father all about that. He was much pleased about the watermelon rinds, and all the waste from them, the cows seem to like it. Father says he means to raise a quantity of them next year on purpose for the cows."

"I can tell you of another use for them if he has enough of them."

"What is that?"

"Making syrup. A friend of mine made a quantity this year, and I think it fully equal to any you can purchase any where; but I must stop chatting about that and return to the butter."

"Yes, you said you would tell me about putting it up."

"In the first place you must get some dairy cotton, a thin light kind, and it comes cheaper by the piece. I will let you have some until you get started. I always wash mine before using, as I don't like the taste of the dressing used in white goods; I wash and iron it, that makes it ready for use. When the butter is properly worked, cut or tear the cloth into pieces about as large as half a sheet of writing paper; prepare a bowl of strong salt and water, get the coldest water you can, put the number of pieces required to soak in the bowl, until you have weighed out your butter."

"How shall I weigh it? I have only the common spring balances, and we cannot afford anything more convenient just yet."

"That is just as well, my dear; you have only to take one of your pieces of butter cloth from the bowl, wring it quite dry, and cut the butter with a wooden spoon or paddle, place it on the cloth, fold up the two opposite corners and hook it to your spring balance; as you weigh each pound, put it in a separate cloth from the bowl, and place it in the tray or pan, ready to form into pats or cakes. I usually make them square or brick shaped, this is the most convenient to pack up. Get your father to prepare a square smooth board for you, a foot and a half long by a foot wide,—keep it expressly to form your butter on; wet a piece of the cloth large

enough to spread over it, so that no taste of the wood will affect the butter. I have seen a marble slab used, but we will not aspire to that until a few more of the marble quarries of California are opened. You will find it quite easy to make your pound of butter in any shape upon the board. When all is ready, pack them in tin cans or pails enveloped in wet flannel, and to secure from dust slip them into a bag."

"Well, Aunt Betsey, I am sure all this is very simple, and I think I shall succeed by doing just as you say."

"Yes, Susy, you will find that a little system and care in regulating your work will make it easy, and I doubt not you will give satisfaction, and perhaps next year you can send some of your butter to the state fair. I see that the managers offer a special premium for the best butter made by a girl under eighteen; and speaking of fairs reminds me of an item in the paper the other day headed—"Deserved Censure." It was about an old lady at one of the fairs at San Francisco, and she expressed her opinion that there was not a woman in California that knew how to make good butter. I thought I would like to send the poor woman some, to prove to her that she was mistaken, and I really pity any one who has to live without good butter or good bread either, for both should be excellent for either to be properly appreciated. But see, Susy, I have knitted up all my yarn and must go home. C.

CALIFORNIA WOOL IN THE EAST.

WE copy the following interesting article from a recent number of the *Wisconsin Farmer:*

"The importance of wool culture to the State of California can scarcely be estimated, and anything in reference thereto, calculated to advance it, cannot but be regarded with deep interest. It was formerly a decided objection to our wool in eastern markets, that it was not sufficiently well assorted and classified when offered for sale. This objection, we are happy to observe, is disappearing. On this subject an intelligent correspondent, writing to us from Westford, Massachusetts, under the date of March 18th, 1860, (and who, by the way, informs us privately, that 50,000 pounds of wool such as he recommends the culture of, are used by the mills of his locality weekly) offers the following remarks:

"'As a New England manufacturer, I feel much interest in the production of wool in California, as we look to that State and Texas as the sections whence our increased demands for that article are eventually to be supplied. California wool is well adapted to the manufacture of carpets, blankets, and flannels. I have been using more or less California wool for seven years, and prefer it, for many purposes, to any other I can find.

"'When I first commenced using it, I found coarse and fine mixed together, and was obliged to buy forty per cent. of wool that I could not use, and had to sell again. For the past two years the wool has been graded, and the bags come marked in such a manner that manufacturers know the quality of wool they contain—buy it with confidence, and pay the full value of it.

"'While starting so extensive a branch of trade, it is very important that each grade of wool should have a mark for itself, and the manufacturers will then supply their wants knowingly. Whereas, if the wool comes marked to suit the fancy of the shipper, the buyer will take the benefit of any uncertainty, and the transaction, though favorable to the buyer, is not satisfactory to either party.

"'The grading and marking of wool I would strongly urge upon your wool dealers and shippers.

"'I purchased a lot of California wool a short time ago, marked in a manner with which I was unacquainted. It was carelessly graded, and I, for my own safety, based the price offered for it on the coarsest part of the wool. I am now using it, and find one-third of it finer than was wanted for the grade of goods intended to be made from it. Though a gainer in this transaction, it is much better for the manufacturer, in the long run, to supply himself with stock he is acquainted with.

"'I would respectfully make a few suggestions to wool growers. The low grades of California wool have dead hair in them, which will not color. The dead hairs are an indication of the sheep being run out, and diseased. Recently, the wool received is much improved in this respect, and shows more care in its cultivation.

"'The grade of wool I would recommend farmers to raise, as being most saleable and profitable, is that adapted to delaine manufacture. This branch of trade has reached great perfection in Massachusetts, and the supply of wool for this purpose falls very much short of the demand. The Pacific Mills at Lawrence have imported Southdown wool from England, within the past few months, as our domestic production of this grade is insufficient.

"'A cross between the Southdown and the native breed is exactly what is needed. Farmers will find that the weight of fleece, and price obtained therefor, will result more to their advantage than from any other breed. Southdown sheep are apt to have a tendency to black fleeces. Black wool is not so valuable as white for delaine purposes, nor, indeed, for any branch of manufacture; therefore, care should be taken in the selection of Southdown bucks, and see that they come from white flocks for two or three generations back. It is not by any means uncommon to have black lambs come from white sheep of the Southdown breed.

"'Woolen manufacturers in this section are doing a prosperous business, and all the mills are in full operation. Flannels and fancy cassimeres have proved very profitable to the manufacturer for the past two years. The flannel manufacture is extending itself more than any other branch of woolen goods at present.'"

PACKING EGGS.—Take the barrel, or tub, and put a layer of ground plaster in the bottom; then take the eggs, set them up on the ends—don't have them so they will hit each other—then add more plaster; then another layer of the eggs, and so on until the vessel is full. Set them where they will keep dry, and in the spring you will have a plenty of fresh eggs on hand.—*Ex.*

BREEDING SOWS AND THEIR YOUNG.

MR. J. H. WILLARD, who seems to understand the subject pretty thoroughly, gave some time since in the *Maine Farmer*, his views on the above subject, from which we select and condense the hints below:—

His rule in selecting the pig to raise for a breeder, is to "count the teats. One with twelve fully developed teats will infallibly be prolific and a good nurse—good for milk and careful of her young. Fourteen teats should be preferred; but never," he says, "try to raise pigs from a sow with less than ten good teats. Avoid breeding in-and-in."

Another important point is that the sow "should be so petted as to become fond of the person who has the care of her, and thus lose the natural ferocity of her kind, and not be disturbed by his presence when she brings forth her young."

As to care and keeping he remarks: "At all events, she should have sufficient space and exercise, to insure good health and the use of her limbs. If she can occasionally have an out-door run, and a chance to root the ground, it will be beneficial. Give a sufficiency of food to keep in good flesh and growing, a sufficiency but not an excess of salt, and an abundance of drink. Keep warm in the winter and cool in the summer. A pailful of cold water, occasionally dashed on to the animal on a hot day, is very reviving and conducive to good health."

"The hog goes with young sixteen weeks. They seldom vary twenty-four hours from that time. The feed should be gradually increased as much as eight weeks before they bring forth. For two days after, she should have no food except a little warm gruel, not to exceed half a pint a day of meal. She should have all the warm water she will take, which will sometimes be two pailfuls in a day. This is very essential, as it helps the flow of milk and prevents fever. You may now gradually increase the feed till the pigs are two weeks old, when she should be full fed. If you have no better feed, good Indian meal mixed with milk will answer very well, if you give enough and feed regularly. The pigs should be taught to eat with their mother as young as two weeks, which may be done by having a broad shallow trough, and gently putting them into it when the mother is eating. By pursuing the foregoing course, I have not failed once for the last thirty years, when I have tried, in raising a healthy litter of pigs."

HOW I MADE SORGHUM SUGAR.

A NUMBER of my neighbors having witnessed my success in making sorghum sugar, requested me to write out my process for the public benefit. If my experience is of any value, well; if not, there is no harm done.

The sugar I send you is made from syrup manufactured last fall by Mr. John Donnan, of this vicinity. The cane was grown on sandy soil, and cultivated as you would cultivate corn. Mr. Donnan took his cane to a Cook Sugar Evaporator, on

an adjoining farm, to be boiled down. As he only desired syrup for table use, it was made thinner purposely, than if intended for sugar. Happening to see some of it in May last, I said it would crystalize if made a little thicker, and was told to try it. I did so; then set it away in a room at a temperature of 78°. In two days' time it was a mass of crystals, and in three days I set it to drain. The result you see.

In the manufacture of the syrup no lime or chemicals were used; and I put nothing into it whatever, when I undertook to crystalize it. Had the syrup been made thicker last fall, and set away in a room at the proper temperature, say seventy-five to eighty degrees, it would have crystalized just as readily then as now.

I have been equally successful with other samples of syrup. The difficulty is in knowing when it is boiled just right, before it leaves the Evaporator. The best test I know of is the appearance of the syrup when allowed to drip from a paddle. When it falls in rather brittle flakes, it will crystalize at once. When boiled to the proper consistency, it should be put into conical shaped sugar coolers, with a gate to draw off the molasses, after crystalization. When the syrup has crystalized, it should be allowed to drain twenty to thirty days; then spread upon a wooden platform, exposed to the sun's rays until the color and texture are satisfactory, being frequently stirred meanwhile. Sorghum sugar made in this way ought not to cost over two to three cents a pound.—*Ohio Farmer.*

SPAYING COWS.

Translated from the "Journal d'Agriculture Pratique."

A FARMER has recently demanded that there should be a law made to prevent the slaughter of calves; it would be necessary to demand at the same time a law requiring the farmer to produce two, three, or four times the amount of forage. The second decree should at once follow the first, for we cannot suppose it would be possible for a farmer to keep or raise a calf when he has not food sufficient for it.

If we consume more of veal in France than in England, it is for the reason that we produce less roots and forage. Now in interdicting the slaughter of calves, we do not make the least gain in the world. Is it true that at the end of the year there remains a surplus of unconsumed forage? If not, it is not true that consumers are wanting.

This simple argument answers the objections which have been made to the spaying of cows.

"But you diminish the production of meat, you dry up the sources of public aliment." Do you believe, then, that if we spay cows at the age of eight or ten years, after they have borne three or four calves, the quantity of edible meat will be diminished? It is probable that the number of calves will decrease, that is to say, the number of calves from old cows, and which are killed at six weeks old—animals of bad shape, with skeletons prominent, with narrow chests and big bellies, poor consumptive beasts, children often of consumptive mothers.

There will be, perhaps, less veal, but more beef. It is not so much the number of animals killed upon which depends the quantity of edible meat, but the state of the animals as to their more or less perfect fattening. What advantage is there in having a mass of bones covered with muscular fibres, containing neither juice or other nutritive qualities? What we do need is flesh, and good beef flesh, when at least it can be produced by the cow.

Do you not know that among domestic animals the flesh of the female is more tender and succulent than that of the male? To make the cow a better animal than the ox, we have but to do as with the male,—to take from them those organs which have become useless, and which by their powerful influence upon the animal economy tend to prevent their taking on flesh.

We shall thus slaughter less poor cows and more good ones. There are old worn-out cows killed at fifteen or eighteen years of age, of which the flesh is hard, tough, and with but little nutritive quality, to the detriment of the reputation of the beef of cows. But we are well convinced that the production of meat in place of being diminished will augment. Instead of losing nourishment in a bad machine which consumes much and returns nothing, we put roots and forage into an excellent apparatus which receives little and returns much. A beef animal is a machine to produce flesh, as the field is a machine to produce corn; there are good and bad animals in point of fattening, as there are good and bad fields in point of production.

Consider an unhappy man afflicted with a tape worm; he eats like an ogre and remains as thin as a nail; nothing profits him. Most old cows have a tape worm.

But the production of milk? you will say. Nourishment given to a spayed cow produces a double effect. It augments the production of milk at the same time that it predisposes the animal little by little to lay on fat; thus when the cow does not produce a quantity of milk sufficiently remunerative, she is found presently fatted and all ready for the butcher. A good spayed cow gives in the first year of milking, four, five and six thousand litres (quarts) of milk. These figures have been sufficiently established by the most unquestionable authorities.

The flow of milk is as abundant during the year as in the first days, and lasts much longer than with an ordinary cow. It has been estimated that for an ordinary milch cow receiving sufficient aliment, the augmentation of milk may be reckoned at the least at thirteen hundred and fifty litres.

On the other hand, the yield of milk is not only superior with spayed cows,—not only is the fattening of these animals quicker, more easy and complete, but the milk will return a third more in butter and cheese, and the flesh is more succulent, tender and more thoroughly penetrated with fat.

This double phenomenon is easily explained by the youth of the cow, by the distance from calving, by the placidity of the cow disembarrassed of the troubles caused by the rutting seasons. The digestion is always good, and the animal is always quiet, and all that it consumes goes to its profit.

In proportion as the time of calving grows distant, the milk becomes more equal

and more homogeneous; it acquires, in a word, more of the quality of that which comes from a cow not spayed when she is in a state of perfect quiet.

But it is often very difficult, if not impossible, to obtain without spaying this state of quiet; above all, when we give much provender to obtain large products. And if we prevent the covering of the cows, what disorders are produced in the milk functions from the fact that the natural desires are unsatisfied? How many cows contract then the terrible malady of hysteria or nymphomania? The number of cows "bull mad" can fairly be estimated at one-tenth, and all these cows are sick animals.

It is easy to render an account of the advantages offered by spaying cows under the report given of their milking qualities, when we know to what regimen the herdsmen in the vicinity of Paris submit their milch cows, to the end that they may relieve them of those affections which spaying makes completely and suddenly to disappear.

The milch cows of Paris receive abundant and succulent nourishment, but that which debilitates them and renders them lymphathic, and augments the quantity of milk to the detriment of its quality. They are confined permanently to stables, and never allowed to see the light, in order that the rutting season may be delayed as long as possible. They become rapidly consumptive, and produce poor milk during their period of lactation, and give, after they are slaughtered, flesh worse than the milk.

With spaying, the necessity of this unwholesome treatment ceases. The herdsman buys good cows after their third or fourth calving; he has them spayed, and puts them on good healthful treatment; he obtains more and better milk than from his poor and consumptive cows. When the milk diminishes the animal takes on fat, and is sold for a good price and in excellent condition.

These are the different considerations which have determined us after a long and serious study of all the facts gained by repeated experiments, to put the spaying of cows among the number of operations that it is needful to encourage among farmers. —*American Farmer.*

FATTENING TURKEYS.—Much has been published of late in our agricultural journals in relation to the alimentary properties of charcoal. It has been repeatedly asserted, that domestic fowls may be fattened on it without any other food, and that too in a shorter time than on the most nutritive grains. I made an experiment, and must say, that the result surprised me, as I had always been rather skeptical. Four others of the same brood were also at the same time confined in another pen, and fed daily on the same articles, but with one pint of finely pulverized charcoal mixed with their meal and potatoes. They also had a plentiful supply of broken charcoal in their pen. The eight were killed on the same day, and there was a difference of one and a half pounds each in favor of the fowls which had been supplied with the charcoal, they being much the fattest, and the meat greatly superior in point of tenderness and flavor.—*Germantown Telegraph.*

ABOUT SURFACE ROOTS.

WE would not so soon again introduce to the notice of our readers, our views of the importance of deeply-running roots over those nearer the surface, in California soil and climate, were it not that the past season has brought a great deal of additional proof in support of our position, early assumed, that, unlike other countries where rains occur every week of summer, here it is not advisable to encourage the growth of the roots of trees so near the surface of the ground. Our reasons, oft reiterated, are two-fold. A fruit tree or vine with roots near the surface, feels too quickly the enlivening influence of the few warm days that occur in winter or spring, in all latitudes, causing a premature starting of the buds, or bloom only to be destroyed or greatly injured by the return of colder weather, before the steady warmth of spring shall have fairly set in. Besides this effect, surface roots are exposed to injury during the whole of summer, from the excessive heat of the sun's rays upon the soil, which more deeply-running roots are not subject to.

Another, and the main advantage that we have always claimed for deeply-running roots is, that such roots are sure to save the tree or plant harmless from the otherwise injurious effects of our six months summer's drouth. Our opinions, however, upon this point—the advocacy of cultivating deeply-running roots—have been assailed by a cotemporary nearly as often as we have advocated them; and now, who is in the right? Already we find the writer of a prize essay on the cultivation of the vine in California, advocating the planting of the vine with its roots so pruned as to "induce a tap-like tendency," which is only another name for deeply-running roots. But even in the Atlantic States, where the surface soil is supposed to be always moist enough, we find advocates and supporters of the deep root system. We would here refer particularly to a communication from A. S. Fuller to the *Horticulturist*, in what is termed "A review of the grape question." In this, Mr. Fuller takes exceptions to the opinions of Mr. Bright, author of "Bright on the Grape," in reference to the effects of shallow planting. He says:

"*Very* shallow planting is urged by Mr. Bright, as of great importance in grape culture, as well as in other branches of horticulture. While we do not believe in *very deep* planting, we also look upon *very shallow* planting as a thing to be avoided in grape culture as an evil, the consequences of which are more disastrous than those of very deep planting.

"The advocates of shallow, or *surface* planting, as we must call it, say that if the roots of the vine are allowed to penetrate the cold, wet subsoil, it will languish, and the roots will decay, the vine become sickly, &c. In the first place, vines should never be planted upon soil that has a cold, wet subsoil, for in such cases they will fail, whether planted on the surface, and soil heaped over them, or a foot below. If soil is properly prepared, say at least two feet deep, there will be found to be little danger of the roots remaining too deep in the soil, even if they were placed there at first; for it is well known to every one who has examined a grape root, that the

great tendency of the working roots is to the surface, and if they are allowed to take this position, and hold it, the lower roots, having nothing to do, soon decay.

"Now, these surface roots are exposed to every change of weather; if it is dry, they feel it first; if a warm shower comes, and soon after, great heat, the tender rootlets are exposed to such a degree of heat that they are scalded, the effect of which is soon seen by the shrinking of the fruit and drooping of the leaves. In cool climates this will not often take place; but then, again, the roots, when very near the surface, are exposed to the cold, which often destroys them.

"Keeping the working roots of the vine several inches below the surface, was considered in olden times a thing that *must be* accomplished; and to effect this end, the operation of ablaqueating the vines was resorted to, which we find described in all the ancient works on agriculture. To be sure, they had a somewhat warmer and dryer climate than we have; and again, they never thought of planting vines on ground that had not been thoroughly *pastinated* (pulverized) to the depth of from two to four feet. This operation of ablaqueation, was the removing of the surface soil around the stock every autumn, and cutting off all the surface roots close to the main stem, to the depth of six to eight inches; some writers recommending more and others less—differing according to locality, soil, &c.—but all speak of its importance.

"In this latitude, no working root of the vine should be allowed to come within six inches of the surface, and at the south a still greater depth will be required for perfect security against the changes of the climate.

"Our best and most experienced vine-growers at the present day understand the importance of having a dry, porous soil, and then compel the vine roots to work below, instead of on the surface.

"We asked Mr. Schneike, of Cincinnati, (who is certainly authority on this question) what was his object in trenching his ground three feet deep, and putting the surface soil at least two feet below the surface. His answer was, that he wanted the food for his vines below the surface, because he wanted the roots to work there, and not on the surface. Mulching is recommended by Mr. Bright, as a protection for the roots in surface planting. This will answer very well for vines or other plants the first season; but to continue it for an indefinite period, and have it successful, is very doubtful, besides being very troublesome. It is making a safe harbor for all kinds of vermin; and further, the most that can be said of it is, that it is the most slovenly mode of cultivation, in appearance, that can be recommended.

"Mr. Bright claims you, Mr. Editor, as well as Marshall P. Wilder and P. Barry, as favoring this system of surface planting; but if either you or they have ever practiced or commended the system, we have failed to discover it."

THREE GREAT AMERICAN INVENTIONS.

TO America belongs the honor of giving to the world three of the greatest inventions of the present age. These are the Electric Telegraph, The Mower and Reaper, and the Sewing Machine, which constitute three great representatives of the commercial, agricultural, and domestic worlds. Though mysterious and wonderful are the operations of the Electric Telegraph, yet it is but secondary in practical importance to the Mowing and Reaping Machine; for it is upon agriculture and its appliances that commerce chiefly depends. It was eight to ten years after the last great efforts were made to construct machines for cutting grass and grain, before they became practically perfect. Enough, however, was seen in the original mower of Ketchum, and the reaper of Hussey, to warrant the conclusion that complete success was attainable. It is seldom the case that the first inventors of a great design succeed in carrying it through to perfection. But these men having reached a starting point, thousands of others set to work, to perfect what they had begun; one has overcome a difficulty here, and another there, each having contributed something towards the completion of the work, until now, so far as the practical operation of these machines is concerned, the farmer has little more to desire. Yet, notwithstanding the great perfection to which these machines have been brought, they will, of course, be still improved in numerous minor points.

Without the aid of these machines it would be impossible at the present stage of the world's progress in other matters, to harvest the grass and grain that are now grown, or to secure enough of these two crops to meet the wants of the present population. And while the mower and the reaper have been pushed forward to their present degree of perfection, other departments of farm labor have received corresponding aid through the invention of other machinery.

But while the telegraph is rendering such essential aid to commerce, and the mower and reaper to agriculture, the sewing machine is, if possible, doing more to relieve the weaker branch of the human family from the severest portion of domestic toil.

The more valuable an invention proves to be, the more liable it is to become the prey of pirates, who seek to thrive upon the toil of other men, and hence these three great inventions have been the most fruitful subjects of litigation. But recent decisions have established the legitimate claims of those leading inventors, though at a cost of hundreds of thousands of dollars.

With the sewing machine as with the mower and reaper, it is but recently that the chief difficulties in the way of its perfect operation have been overcome. The first patent issued for a sewing machine was in 1842, and this, like several subsequent inventions and improvements, failed of any practical results. In 1847, Elias Howe, Jr., invented the most valuable feature now connected with these wonderful machines—a feature that is indispensable to all subsequent inventions. This consisted "in performing a seam by a combination of the eye pointed needle and shuttle." After being reduced to poverty in defending his rights in the courts of law, Mr. Howe is

now reaping a rich reward from the patent fees now paid him by the leading manufacturers of machines under other patents, for the right to use what is termed the lock-stitch. Since the issue of Mr. Howe's patent, about *three hundred* patents have been granted for various improvements in sewing machines.

In 1855 there were sold by eight of the most prominent manufactures, 3,513 sewing machines, and in 1859, the same companies made and sold 46,253; but by far the largest number of these were made and sold by three companies, viz.: Wheeler & Wilson, Grover & Baker, and I. M. Singer & Co. The patent fee received by Mr. Howe for the number of machines manufactured by these several companies during the year 1858, amounted to the handsome sum of $143,000. Up to 1853 he had not received a sufficient amount from his invention to pay the patent office fees.

The invention of the spinning jenny and the power loom wrought a wonderful revolution in the manufactures and trade of England, increasing the consumption of raw cotton from a few thousand pounds up to a *thousand millions* of pounds in 1858. The invention of the power loom led to serious riots in England by the hand weavers, fearing that by this invention they would be driven to a state of starvation by the want of employment. And so it was apprehended on the part of those whose scanty subsistence depended upon the needle, when the success of the sewing machine became fully established; but no such results have been realized; on the contrary, they have proved the greatest blessings; thousands of destitute females have toiled night and day with the needle, and received each in return from one to two dollars a week. A shirt manufactory in New Haven, Connecticut, employs five hundred of these machines. In Troy, New York, upwards of three thousand of the same class of machines are at work making shirts and collars. To make a fine shirt by hand upward of fourteen hours of constant labor are required; with the sewing machine it can be done in one hour. A coat that formerly required seventeen hours to make, can now be done by the machine in three hours. Besides the immense saving of labor, and the superior quality of the work done by the machine, the comparative healthfulness of the two modes of labor can hardly be estimated.

Such are some of the most important results of this last great American invention. These machines are now finding their way into the remotest corners of the globe. They are used in China, Hindostan, Australia, Turkey, Africa, South America, and all parts of Europe. It will prove the greatest boon to woman of the nineteeth century, and the "song of the shirt" will be heard no more.—*Valley Farmer.*

KEEPING ANIMALS IN DARK BUILDINGS.

BELIEVING that the public temper is now in a condition to investigate the contest of almost any and every result, and having been always opposed to the unnatural—not to say inhuman—practice of depriving animals of the use of one of their most important organs, viz. the eye; I will now offer a few remarks, as they occur, from a practical consideration of the practice named above. It is very strange

that—whatever may be fact with money-making breeders—men of so much candor and intelligence as the late John P. Norton should be found in the ranks of those who defend such an abuse; yet I find him and others of equal distinction, going so far as to advocate the fattening of animals in unlighted buildings; all of them justifying the outrage on acccount of the *profit* supposed to arise from it. Prof. Norton's advocacy of it may be seen in his "Elements of Agriculture."

Though this practice is specially advocated as economical for fattening animals, store stock, horses particularly, are frequently subject to the same usage; and for what? Because, when kept in the dark, they sometimes become more quiet and tractable; a sure sign, in my opinion, that they have been injured in their health; for, it is well known that both man and animal are in the highest spirits, exhibit the most vivacity, when enjoying the most vigorous and complete health. Thus the *loss* of that roguish playfulness that is seen most frequently in the horse, for instance, is a sign of lost *vigor*, or impaired health, rather than of increased tractability. We know that it costs more to keep a blind horse than one, otherwise similar, that can see, for the former is entirely dependent on man for *all* his food, while the latter will often help himself, and make his wants known, if pressed by natural hunger. It is certain, moreover, that the eye cannot be injured, without the entire nervous system suffering therefrom more or less debilitation. But we may bring home this subject to our own immediate comprehension.

When dark, cloudy weather, succeeds bright, sunny days, most, if not all persons, are subject to comparative lassitude and low spirits, because of a *partial*—only a very *small*—reduction in the usual amount of *light*. So much are the nerves dependent, for their health and vigor on it, that light may be said, in a physical sense, to be the soul of the nerves; for the latter can have no healthy activity without it. It is a *sine qua non* to the highest perfection of the nervous functions.

We can also readily test the comparative effects of light and darkness directly on the eye itself. When, for instance, in a dark night, we pass from a well lighted room out into the surrounding darkness, it is a considerable time before we can discern any of the numerous objects about us; we "cannot see yet;" why? Because the change has been more sudden than is natural, and greater, therefore, than our optical powers of adaptability are equal to. Materially, the change from light to darkness, on the contrary, is as *gradual* and as nearly imperceptible as it is possible to observe with certainty, and to this sort of natural change the eye adapts itself, not only without injury, but with benefit, because such change supplies the alternation of conditions which nature requires in resting and restoring one organ, or set of nerves, while she works another, and lighted buildings admit this light in the same gradual manner.

It must here be remembered that *all* the nerves of the animal system are so joined and connected in fact and by sympathetic action, that no part can be much injured without the whole being affected detrimentally. The brain of man nor brute cannot act well without a natural supply of the force of light, and the eye itself, being at once the organ and focus of this life-promoting force, and being so exceedingly susceptible to its power, may be said to be the essential feeder of the nervous system,

and probably is composed of its most sensitive and rectified matter. Possessing superior force for the performance of superior functions, the quality of its composition will be above rather than below; superior rather than inferior to that of minor and less vital parts of the nervous tissue. The eye, therefore, is an influential or *guarding* organ, and any injury to it must be *more* disastrous to subordinate or less important nervous parts than it would be if occurring directly to an inferior part or nerve itself. All who have sustained even a slight injury to the eye, (and most owners of stock will, I apprehend, come within this category) as the irritation from a hay-seed, for instance, will understand the susceptibility, and the more general effects of temporary injury of this grand optical contrivance for supplying the nerves with their vivifying aliment, solar *light*.

Now let us considerately examine the results that must ensue when we shut up in a *dark* stable, a steer or heifer, in good or fresh condition, and with such signs of having good health, as vigor, elasticity, and frequent frolicsome gambols. When an animal in such condition is shut up in a dark place—to say nothing of tying—what happens, or rather must it not happen, that he or she must in a very short time begin to feel tired of restraint, uncomfortable in position, and eager to escape therefrom, if by any means it can? But, perceiving no means of escape, what follows? Loss of the playful spirits, first; then languor, lassitude, and an inclination to lie down. *This* inclination is not a natural one; but results in large part from muscular relaxation, from want of the exhilarating influence of light. *Exercise*, in the dark, might do some good; but this is not practicable, except in a very limited degree. I am aware that darkness is *supposed* to promote quiet, but this can only happen when darkness is *naturally* required for the purpose of *rest*. Alternation of occupation, or rather of condition, is relatively rest, and as refreshing and naturally desired, whether it involve exertion or its opposite repose. When we have slept, certain organs require change, and must have it; *exertion* then *rests* us or relieves, more than keeping still. When we have worked hard, we require repose; and sleep is then the natural alternation; and as with the body so it is with the eye; it needs these alternations. Light was made for the use of eyes, and the eyes of all creatures were made to use the light of day naturally. I am not going to preach a homily; but I must say the order of nature cannot be inverted or reversed with advantage; nay, not without certain loss, besides that arising from the infliction of cruelty; the loss of one's own respect. Let us see if this must not be so.

When an animal is confined in the dark, loss of spirits, languor and lassitude, soon and certainly follow, which is in part due to the precaution of exercise. But the fact that the admission of *light*, and every one can see that it is a fact by trying it, will mitigate much of the languor and lassitude, shows that the exclusion of light *in the day time*, is the cause of much of the lassitude and the nervous relaxation which ensues. Loss of *spirits* is *not* a cause, but a *consequence* of nervous and muscular relaxation. When, therefore, animals confined in the dark, become quiet, it is because they feel languid and *are* relaxed, and they are muscularly relaxed, because they have been deprived of the natural nervous, and therefore muscular stimulus, the

light of the sun. The muscles are affected in a relative degree and by the same causes that injure the health and vigor of the nerves, and the exclusion of light in the daytime is a most influential cause in promoting such results.

Digestion, or the obstruction of aliment from crude food, is a part of the general muscular function; is for the most part as essentially a muscular action as walking or licking with the tongue; it will be well performed in proportion to the health and power of the general muscular organs; the organs of digestion are muscular organs, and must be affected injuriously or beneficially by the same causes which affect other parts of the muscular system. The *exclusion of light* relaxes and weakens the general muscular powers; it must therefore debilitate the digestive powers, and render them incapable of abstracting as much aliment from the *same bulk* or quantity of food as they would if in better health and greater vigor, which they surely would be when no general relaxation is induced by the unnecessary exclusion of necessary light. The digestive powers being weakened, *more* food, which will cost more money and labor, must pass through an animal to enable it to abstract from it and make a given weight of meat, and this is the reason why keeping animals in the dark cannot be more profitable than it is satisfactory in other respects. I am opposed, therefore, to confining animals in dark buildings, both on account of cruelty and the bad economy of the practice.—*American Stock Journal.*

A WORD ABOUT THE TREATMENT OF WOUNDS IN HORSE FLESH.

Editor Culturist:—Nothing is more common than to see men adopting the opinions and practices of others without hesitation or reflection, when a few moments of either would show the absurdity of both. I myself was educated in the doctrine that "horse-flesh should never be bound up," and this crude absurdity controlled my practice until I was thirty-five years of age.

I did not stop to reflect that my own nerves could not bear the exposure to the atmosphere without irritation, and of course suffering. I knew that any exposed nerves of a wound would be relieved by being bound up. I knew that nature would form a scab on any excoriated surface, to shield it from the irritating atmosphere, and that this was nature's method of preventing pain—upon the same principle that when the nerves of the hand are abused with the hammer-handle, the cuticle will thicken, to shield them.

One fact will convey the opinion I wish to inculcate, and expose a most inhuman error. A farmer in Vermont owned what is very common there—an elegant span of iron greys. In their pasture was a large space, partially covered with refuse rock from a marble quarry. One of these horses caught his hind leg between two of these rocks, and the one in front inflicted a shocking wound. For five or six inches up and down, the thin flesh was cut through and through, and mangled in a shocking manner. When I first saw the poor sufferer, his whole system was fever-

ish, the whole limb badly swollen, and the insects running into and out of the black and bleeding wound. But what was the treatment it received? Why somebody had told the owner that "wounds on horse-flesh should not be bound up," and to saturate the wound with lime-water until the bugs and insects would let it alone. So he, in my presence, poured in the lime-water on the upper side, and the lime-water, insects, and *blood* came out at the bottom of the wound. I at once protested most decidedly, and counselled the following treatment: first, bathe the whole animal in water as cool as would be agreeable to him; bathe the limb, and gently rub it for half an hour; then cover the wound with some fine, thin fabric, and over that apply a poultice of grated carrots, moistened with milk; make the poultice large enough to envelope the leg from fetlock to gambrel joints; bathe the limb often. When the inflamation is reduced, apply a softening plaster, to still further reduce the inflamation, and remove the obstacles to healing. In a word, treat the wound just as you would a wound on your own flesh. My advice appeared so reasonable that it was immediately adopted, and a most beautiful and valuable animal saved.

Perhaps this article is already too long, and I will close by saying, I have known wounds on horses to be covered with a coat of tar, to shield it from the atmosphere. All I ask in conclusion is, would a man abuse his own flesh in that way? F.

Oakland, October 12th, 1860.

MODE OF DESTROYING THE GRAPE FLY.

THE grape is probably less infested in California by the grape fly than in any other vine-growing country; yet it has made its appearance in some localities in the State. This destructive insect is worse in the vicinity of vegetable crops, particularly the cabbage, and it is supposed the larvæ are hatched on the cabbages, and afterwards feed on the grape leaf.

No alarm, however, need be apprehended from its presence, as it can be expeditiously destroyed by carrying tin or iron vessels containing some combustible, which on being set on fire, raises a blaze among the vines, after dark. On doing so, it will be noticed that myriads of these insects leave the vines, and fly into the flames. Thus by going through the vines a few times, they may be entirely got rid of, if the vines are shaken during the operation. This piece of information we got from Mr. J. R. Nickerson, a successful vintner of Placer County, who has tried it, and vouches for its efficacy.

Reaping Machines on the Prairies.—The Chicago *Times and Herald* says, that an idea of the amount of ground in wheat may be gathered from the statement of a responsible gentleman of Janesville, who says, that with the assistance of a spy-glass, he saw one hundred and forty-six reapers at work at one time. This is on the line of the Chicago and Northwestern railroad.

SHOEING HORSES.

ONE of the principal objects, in applying shoes to the feet of horses, is to preserve the concavity of the natural foot, at its sole. A horse in his natural state, and, indeed, up to the moment of affixing the first pairs of shoes to his feet, has a noticeable concavity of sole; the hoof somewhat projecting beneath the sole, may be compared to claws, or to the nails of man, each of which aid in securing so many points of resistance; hence in the case of a horse, such conformation of foot aids materially to prevent slipping on smooth pavements, also secures good foothold, so that the body can be advanced with much less muscular exertion, than if the shoe and foot presented to the ground a convexity, in which case no hold or fulcrum could be obtained.

The evil of a convex, or even flat surface, next the ground, is best observable in the hind extremities, the main use of which is the propulsion of the body forwards, and when hauling a loaded vehicle, also. In accomplishing the labor, the power is derived from the muscles and tendons; the bones of the leg are the compound levers; the muscles and tendons being inserted into the bones, it follows that the toe and outside border of the hoof or shoe (provided the latter is concave next the ground) become the fixed points of the leverage; any deviation from this simple mechanical contrivance operates much against the animal's powers of hauling.

Therefore I contend that the ground surface of the shoe should be concave, or saucer shape; the outer rim or edge being prominent, takes the place of the outside edge of the unshod foot, and the surface next the ground being concave, it corresponds to the natural concavity of the hoof.

Unfortunately for the poor horse, very few persons, who preside at the forge, take the above view of the case; hence, if we take up a horse's foot and examine the shoe, we shall often find that the shoe is wrong side up, viz., the convex surface is next the ground, and any person acquainted with the facts in the case, and having the least sympathy for the poor horse, cannot do otherwise than deplore this very faulty method of shoeing.

When Surgeon Percivall first entered the British army, the above faulty method was universally practiced; he immediately ordered the shoes to be reversed—turned upside down—and the cavalry horses were much benefited by this improvement, for it prevented an unnecessary waste of muscular power.

It therefore matters not what may be the form of the foot; whether it be high or low heeled; contracted at the heels; lengthened or shortened at the toe; or having a concave or convex sole; the shoe must, or ought to be, concave on the ground surface. In other parts of the shoe, deviations from a general rule are absolute, in consequence of the ever-varying form and action of the foot under the states of health, disease, and malformation, and in concluding this part of my subject I remark that in the concave ground surface of the feet of quadrupeds, and even bipeds, we are presented with a pattern for the ground surface of shoes, requiring no improve-

ment, and if we were to follow this pattern more closely, there would be fewer accidents from falling, and a less number of unnecessarily lame horses.

The next evil prevalent in a faulty method of shoeing, is that of paring the foot, so as to produce unnecessary length of hoof at the toe; these long toes are a mechanical disadvantage to the horse: he cannot raise the limb and foot, evenly, upward and forward; hence, describes a sort of curve, and in so doing often strikes the opposite fetlock, and thus, as the saying is, "interferes."

Long toes also tend to produce strain, or sprain of the flexor tendons and other parts, and soon the knee bulges out in front on a line with the lengthened toe; then the flexor tendons either shorten, or the anullar ligament, at the back part of the knee, contracts, and then we have a genuine case of "sprung knee," an unnecessary disease, a permanent eye-sore, and the animal is ever afterwards unsound; unless, by the operation of tendinotomy, and the feet being put into a proper shape by a sensible shoeing smith, the animal is able to perform ordinary horse labor; or, in other words, is able to perform the "ordinary duties of an ordinary horse." Dr. Cuming, a very experienced man in the art of shoeing horses, thus discourses on the evils of lengthy toes:

"Another evil, resulting from the length at which the toes are commonly left, is interfering. The horse, finding the long projection in front of his foot as so much leverage, acting to his disadvantage, gradually gets into a habit of shifting it, by raising himself from one or the other of the quarters. This is still more the case when, in addition to the long toe left on the hoof, a small round knob of steel is set into the point of the shoe, as if in contempt of all that nature teaches. With these absurd contrivances placed between his weight and the ground that supports it, it is next to impossible for a horse to raise himself evenly upward and forward, and hence the number that one way or another interfere. If in raising his weight from the ground, the pressure be upon the inside quarter of the foot, then the thick part of the pastern is thrown inward, in the way of being struck by the upper edge of the hoof of the other side. If the cant be the other way, and the outside quarter raise the weight, the inside edge of the shoe is throw round and upward, and runs the risk of cutting with it the opposite leg. Even when the horse from having a naturally good gait, escapes both these evils, still he is not free from trouble caused by this shape of shoe.

"The fore foot of the horse, as nature makes it, has no such projection in front and downward, as that which the smiths here give it, but rather the reverse. The sole surface at the toe is commonly broken off and notched back at the middle, so that the pressure, when the foot strikes the ground or the animal is raising his weight, is distributed over the whole front of the foot. In accordance with this, the coffin bone, which fills the internal cavity of the hoof, has the same turned up and notched back form. In England, France, and on the Continent of Europe generally, wherever Veterinary Schools exist, and scientific attention is given to shoeing, this natural form of foot is more or less followed in the shape of the shoe, and the animal has preserved to him, along with the protection from wear which the shoe gives, the position

of tread for which nature has constructed the other mechanical arrangements of his organs of motion. Why it is not so here is perhaps partially due to the use of the buttris for cleaning out the foot when it is shod, as it is impossible with this antiquated instrument to bring the hoof to the proper shape in all its parts; but it is more so to want of study on the part of those who shoe, of the structure of the foot, its uses, and the relation existing between it and the other motive organs, the bones, tendons, and ligaments of the limbs."—*American Stock Journal.*

HOW FARMING DID PAY.

IN a previous number we gave our readers a sketch of the farming operations of a friend by the the name of Pitchin, and it will be remembered that his first years experience was not very favorable to farming as a paying business. However, he being one of those resolute sort of men who do not surrender on a first defeat, he resolved to learn wisdom from the disasters of the past, so as to conquer future difficulties. The editor will let him tell his own story as we walk together over his farm to see how he operates.

"Try a bunch of these Black Hamburgh grapes, I think they are very wholesome before breakfast," said Pitchin to us, as he pulled off an enormous bunch from a young vine, and handed them to us. "By the way, we might as well commence with the vineyard. There are two thousand vines which were planted when I bought the farm, they are now four years old, one thousand of them are of the California variety; these have borne ten pounds to the vine, which with twenty per cent. of foreign grapes from the other one thousand vines, added to give a higher flavor, I have made into wine, making about one thousand gallons, valued at one dollar clear of expenses, to say $1,000. Then I sold an average of fifteen pounds to the vine from the one thousand foreign vines at twelve and a half cents, wholesale, coming to $1,875, or $2,875, from the vineyard. The orchard has only produced sufficient for the household use, Mrs. Pitchin having dried a good supply for the ensuing year.—Of vegetables we make no estimate, sufficient to say that we have not bought any this season as we did last. Here are our hogs, all the increase of those two litters of Berkshires you saw me bring out when I bought the place. I have raised twenty-five acres of corn which will yield fifty bushels to the acre, one thousand twelve hundred and fifty bushels, which is worth one dollar and fifty cents a bushels to fatten Berkshire hogs, making $1,875 for the corn. You observe I have one of Dickerson's patent wind mills to pump water for all purposes about the house, garden and barns, and to this is attached a small mill which grinds horse feed and cracks the corn for the hogs. The price of the whole apparatus is under four hundred dollars, and I have saved more than the cost the past year, because ground feed goes much farther with stock than whole feed. All my land was in grain last year, so I stacked my straw and got a straw-cutter to which I could attach the belt from the wind-mill, and have kept my teams and dairy cows on cut straw and ground feed, which I find a good substitute for hay. You observe that field which joins the vine-

yard, there are ten acres of beets, carrots and parsnips; I find that horses and cattle fed on cut straw and ground feed thrive much better by giving them some roots for supper. Then the store hogs get nothing else but what they pick up in the pasture. That long wooden trough with a tight cover has a boiler near it, with a pipe which conveys the steam into it so as to steam the roots, on which we feed the sows that are suckling pigs and are about to drop their litters; you observe I have a separate field for them. This ten acre field where the root crops are growing, is to be planted to vineyard this winter. The root crops are raised on it this season so as to prepare the ground for the vine. We will go through the poultry yard, to get into the corrall where the boys are milking. Our hens and turkeys are very healthy, we feed them on boiled carrots, mixed with corn meal, being careful that both are sweet. I have built sheds with stalls since you was here last, and each cow has a number marked on her horns corresponding with the same on a stall, and on being driven into the corrall each cow goes immediately to her place, where a bait of roots are ready for her to eat while being milked; we give a *quid pro quo.* A register is kept showing when each cow will come in fresh, and we manage te have most of them fresh in the fall so as to make butter when it commands an extra price. This we are able to do successfully by our system of feeding green crops. This season yonder field of alfalfa is a great assistance, I calculate it will be good green pasturage the whole fall and winter. There are forty acres of it, and I think with a little help from cut straw and ground feed in the winter, it will forage one cow per acre the year round. We will let Mrs. Pitchin and the girls give the proceeds of the poultry yard and dairy, when we return to breakfast.

This field produced forty bushels of wheat to the acre, or one thousand two hundred bushels I shall buy a lot of store hogs and grind my wheat with corn and feed it out. Store hogs I can buy at three and a half cents per pound, and when fat they will sell for eight cents. In this I gain over one hundred per cent. between three and a half and eight cents on the original weight of the hogs, as well as eight cents per pound on all flesh added by feeding, which latter consideration makes a good price for my wheat. In short, I may say that my wheat nets me $2,500.— Thirty acres of Barley I shall make no account of, as it will be fed out on the farm. I am of the opinion that all crops raised on the farm should be reduced to wine, meats and dairy products, so as to lessen the cost of transportation to market, and save the bulk of the atoms yearly extracted from the soil, which by this course can be returned to the land in manures and fertilizers. I see the breakfast telegraph out so we had best return to the house, when I will figure up the results of this year's operations."

As farmer Pitchin and the editor went into the main entrance of the house, the latter pointed to a large mansion which was in course of construction among a grove of live oaks at some distance on an adjoining farm, and asked the former who it was that could be making so great an outlay in the buildings and improvements surrounding, seemingly being prosecuted without regard to cost. At this moment the rattle of rapidly approaching horses' hoofs was heard, and on looking down an avenue

which led to the front of the house where we stood, a young man galloped up and alighted from the back of a spirited Black Hawk, when we were introduced to the proprietor of the improvements spoken of. Tying his horse and passing down into the vineyard where the girls were engaged in gathering flowers which lined the avenues, Pitchin informed the editor that the young man, just spoken to, was the son of wealthy parents in the Atlantic States, and that on leaving college, he came to California for the benefit of a feeble constitution, and that feeling an ambition to carve out his own fortune, he had engaged in the laborious occupation of mining, which had hardened his constitution and rewarded him with fabulous wealth, and accidentally renewing and old acquaintance with his family, he had concluded to buy an adjoining farm, and for pastime turn his attention to raising thorough bred stock, of which occupation he had acquired a taste while at home, when a boy.

Breakfast being announced, a party consisting of Pitchin and wife, two daughters, an editor, and stock fancier, sat down to a table laughing under a load of edibles, mainly composed of the farm products, and did the substantial viands ample justice. After breakfast was dispatched, our young stock fancier apologised for so early a call, and pleading business engagements in town, was soon rattling away over the avenue on his fiery Black Hawk.

"I told the editor you would give him a statement of the proceeds of the poultry yard and dairy," said Pitchin, as he turned a countenance full of good nature upon his wife. To which madam, assuming a business air, replied, "O certainly. Well, Mr. Pitchin agreed with the girls and myself that if we would take charge of the milk when taken to the dairy room, and the poultry, we might have half of the proceeds, but I will not trouble you with details, suffice to say that Mr. Pitchin's half has paid all of the store bills. And," she added with a smile, "We have *loaned* him money to pay the hired help as we went along out of our share, and this is not all." Leading the way to the parlor she showed us a costly set of silver and piles of linen made up into upholstery articles, which had been bought with her's and the girl's share of the produce of the poultry yard and dairy. Both of the girls came into the room just as their mother was showing us a rich dress pattern of brocade silk. To us it looked very much like a wedding dress, and we were convinced of this fact as the eldest girl skipped out of the room with a very red face, and her young sister said with a wicked, merry laugh, "These are all going to the new house after Christmas." Thus it would appear that farmer Pitchin's young neighbor was not intending to devote himself only to the raising of thoroughbreds; he seems really in a fair way to establish a home which, while it is adorned with every elegance of art, shall be presided over by one, although raised in the metropolis, yet who had the good sense to adapt herself to the change of circumstances and by bravely aiding her kinsman to rise above calamities, finds herself the chosen companion of a man who has education, refinement, youth and fortune. F.

IRRIGATION.

From California State Agricultural Society's Report for 1859.

THE whole theory and practice of irrigation, or the artificial watering of lands by flooding the surface, as practiced in many localities in California, is of doubtful utility; for since the time of its first adoption here, it is quite questionable whether a single instance can be shown, where the benefits derived from its use, have not fallen far short of the actual cost attending it. That irrigation may be made available in some places of limited extent, to increase the vigor of trees and plants during the dry season of our summers, and particularly with amateur cultivators, there is not a doubt, but that it will ever pay the cost pecuniarily, is extremely problematical when applied to extended field culture.

It is believed there are other practices that cultivators may adopt, to insure continued growth during our dry summers, that would be quite as efficacious as irrigation, and never attended with the least injury. One of these, is mulching the surface of the soil with any substance that has a tendency to render it a nonconductor of heat, at the same time that its power of retaining moisture with little loss by evaporation is increased.

Another practice is that of frequently stirring the surface soil, thus preventing the growth of all weeds. It is believed that either practice, or a combination of the two, can be made to take the place of irrigation, in and under all circumstances of soil and climate. It is equally adapted to sandy loam, clay or adobe lands, and as no mistake in its application can possibly occur, there is not that liability to go wrong for want of a practical experience, as there is in the practice of irrigation.

In introducing what I have on the subject of mulching and stirring the surface of our dry soils, as connected with the subject of irrigation, it seemed the more necessary because, to urge the abandonment of irrigation without providing a substitute, would be to consign to sterility many beautiful plants that without regard to cost are now the brightest gems in our State's horticulture. It is to be regretted that in offering premiums for essays on irrigation, mulching and stirring the soil had not been connected with it, because the two can better be treated collectively than otherwise.

Indeed it seems hardly probable with the present view now so generally entertained, that irrigation can be wholly dispensed with in the soils of California, that an essay upon the advantages to be derived from its continuance or further adoption, will be ever attempted. For after years of trial and numberless experiments, the point is now conceded, that not only are all nursery trees raised without irrigation, preferable to those grown under its influence, but the fruit of such trees is superior in point of flavor, if not in size; and though but little can be said in favor of the irrigation of orchard trees or the nursery row, many reasons can be given why it often works a positive injury to both.

The liability to excess of moisture where water is easily procured, by which an excess of soft woody fiber is formed, at the expense of the fruit-bearing propensity

of the tree, is one of the evils; but the worst, arises from the liability of such excess of woody growth to injury, from late and early frosts, on account of its immature nature. Doubtless many of the diseases of trees, or their want of constitutional vigor, arises in the first instance from the same cause, climatic influences or the sudden changes of heat and cold upon soft immature wood, souring and poisoning the juices and fitting the trees for premature decay.

Another evil consequent upon irrigation, is its tendency to bring in a spurious vegetation, rendering foul the soil by the excessive increase of noxious weeds, the existence of which in all orchard grounds, is the surest mode of robbing the trees of their proper nutriment and moisture; for weeds not only impoverish all soils, but drink up a large amount of moisture therefrom. Irrigated lands are more likely to have their vegetable products injured by frosts, than those which are not irrigated. Rapid evaporation in all cases, is productive of cold, by the rapidity with which heat is carried off in the process. The products of soils in low, wet situations, are always more liable to injury from frosts, than though they were drier, and irrigation renders the higher grounds equally liable to injury, from the excess of moisture imparted to them; whilst mulching and stirring the surface soil, as a substitute for irrigation, has directly the opposite effect, rendering the soil drier and consequently warmer.

Irrigation from artesian wells in the valley of San José, has proved a failure.—Fruit has been diminished in quantity by a tendency in the trees to produce an excess of wood and the increased injury from frosts, the result of causes already mentioned. Therefore to urge a continuance or the adoption of the practice of irrigation as being adapted to an improved system of California agriculture, would be to recommend a positive evil.

There is no more necessity of irrigation upon our gravelly plains, or adobe lands, than upon the river bottoms, if a proper mulching is given them. Moisture can be drawn to the surface from below the subsoil, amply sufficient for all the wants of trees or plants, and at a much less cost than it can possibly be supplied by irrigation. In the foregoing nothing is advanced as theoretical; it is simply reason and common sense, based upon practical experience. S.

In our next number, we shall give the *prize* essays on irrigation awarded by State Agricultural Society for 1859. W.

AGRICULTURAL FAIRS.

THE local reporter of the St. Louis *Democrat*, Samuel R. Weed, whom many of our readers will remember as a former resident of this city, discourseth thus pleasantly about agricultural fairs:

"When the summer has closed and the harvests have been gathered—when the shorn fields tell tales of well filled barns—when the crimson and gold of the autumn sunsets are gleaming in the foliage of heavy laden orchards—when the yellow corpulence of the lusty pumpkin appears amid the faded green of the thick, standing

ranks of ripened corn—when the rich, clustering grapes have donned their purplest hue, and September has ushered in the full and glorious vigor of the maturing year—it has grown to be a joyous custom in the west and east to hold, in open fields, amid the exhilerating influences of the autumn air, gatherings for the exhibition of the productions of the field, the garden, the workshop, and the drawing-room; to display the fruits of genius, of toil, industry and skill; and these exhibitions are now popularly known as fairs. To these assemblages or fairs, now held in nearly every state in the Union, comes for the purpose of honest rivalry and profitable intercourse, the farmer, with his golden grain, his well grown vegetables and choicest fruits, his fleecy flocks, his rare blood horse, his carefully reared cattle, and his obese swine. Hither, also, comes the mechanic, with his ingenious machines for tilling the soil and reaping the harvest, and to exhibit the combination of wood and iron into various shapes for lightening the labor of human hands. With him, also, the skillful manufacturer brings his artfully wrought wares for use and ornament. And then comes the thrifty housewife, the patient needlewoman, and persevering artist—all to add their quota to the interest of the occasion. Sour, indeed, must be the heart, and gloomy the head, that, beneath the sunshine of a September day, can, amid the throngs of a well-filled fair ground, fail to feel a rare exhilaration of spirits from the happiness and pleasure that sparkles all around. Practical in their character, useful in their results, as they are, there is at the same time an air of poetry about these exhibitions that renders their yearly return an event of importance, which, for weeks and months before its occurrence, is longing and expectation to thousands of hearts."

HORSEMANSHIP.

IN an interesting article on fox-hunting, the London *Quarterly Review* gives some excellent hints on horsemanship, one or two of which will not come amiss to riders who are not fox-hunters.

Four-fifths of the art of horsemanship depends on attaining a proper seat, and one-fifth on possessing a pair of light hands. The generality of riders are apt to sit on their horses in a bent attitude, and when a man rides in this toadlike position he travels always ready, at a moment's notice, to describe a parabolic curve over his horse's head, should the animal take a notion to stumble, and fall, and the result is likely to be a concussion of the brain or a dislocation of his neck—the horse standing by uninjured. On the other hand, when a man sits upright, evenly balanced on his saddle, any sudden jerk or movement forwards throws his shoulders backward.

If the horse falls, the animal is the sole sufferer, the fore part of his body becomes a buffer, preventing the concussion from injuring, in the smallest degree, the rider. If a horse only trips, a rider justly poised in the saddle can easily recover him. The instant he is down, however, the rider should vacate his saddle, as the momentum of the animal will probably cause him to roll over. In leaping a fence, too, if the rider sits properly on his saddle, the horse, and not he, receives the concussion of

any fall that may ensue, simply because the spring of the animal, in taking the leap, had thrown his shoulders backward and his head out of danger; whereas, if the rider had assumed a bent attitude, his nose would have been seen plowing mother earth the moment the muzzle of his horse impinged it.

In the year 1848, Major General William Yorke Moore, of the British army, rode over a precipice of two hundred and thirty-seven feet, perpendicular height, on the island of Dominica, and escaped with his life, although every bone in his horse's body was broken. The accident occurred in the evening. Three men had previously been dashed to pieces at the same place, and a fourth met a similar fate subsequently, when the Colonial Assembly took measures to prevent such catastrophes. Had not the General preserved an erect posture and clung to his horse, his life would have paid the forfeit. His recovery from the shock of the fall was nearly as miraculous as his escape from instant death.

If a horse be but properly dealt with, he can gallop down a turf hill with as much rapidity as along a race course. He should be encouraged by a loose rein, to carry his head as low as possible, to enable him to take care of his feet, and in case of treading on a rolling stone to recover his balance by throwing it up. If the rider, following the instinct and example of the horse, throws his weight backward, the descent can be made at considerable speed, without the smallest danger. The horse must not be allowed to descend the slope diagonally, as he will inevitably slip upon his side. His head must be guided straight onward, but care taken not to induce him to raise it up.

Seated in the attitude described, Jack Shirley, whipper-in to the Todworth hunt, was one day observed fixing a piece of whip-cord to his lash while following his hounds at a slapping pace, down hill, with a large open clasp knife in his mouth, his reins lying nearly loose on his horse's neck. Another advantage of riding in an upright position is that after a while the muscles of a rider lose their obstinacy by getting tired, and it becomes impossible for him to prevent his body undulating to the infinite relief of both parties, with every movement of the horse; whereas, if, like an English jockey, he rides like a frog on a shovel, he inflicts upon his whole frame, as well as upon the poor animal that carries him, an amount of unnecessary fatigue which prematurely tires both.

Another qualification of a good horseman—especially in fox hunting, when fields and pastures are to be ridden over—is to allow the horse to carry his head at its natural level, and not to rein it up, as is the general custom, so that he will lose the habit of using his eyes to ascertain the character of the ground over which he is traveling. If given free scope in this respect, the horse will easily avoid holes, stones, and other dangerous obstructions, even in fields and woods, and if not reigned up at a chance stumble, will learn to depend on himself, and rarely falls if he happens to make a misstep.

SPRING BUDDING.

EDITORS CULTURIST:—Enclosed you will find four dollars for volume three of the CULTURIST.

You ask subscribers to communicate with you. I have a new method of budding fruit trees, or rather a new time for budding, which I think may be useful to know; at least as far as I have enquired it is new. I cut the buds in winter just before they burst, and keep them in a cool, moist place until the bark of the stock will peel so as to admit of the bud being inserted in the usual way. By this mode the bud is put in the stock in a dormant condition, and is in no danger of drying up. The sap of the stock being in vigorous circulation, the bud invariably commences growing on the second or third day, and makes as vigorous a growth as if put in the season previous, thus exempting the bud from all danger of dry weather or frost, which it is liable to if put in in the summer season. I think it will be useful in cases where budding the present season fails. Is this a new method or an old and discarded one? I have practiced it for two years. J. D. MASON.

IONE VALLEY, Sept. 28th, 1860.

This mode of spring budding is not entirely new; nor is it a discarded one, though not very generally practiced. Among the advantages of this mode are these:—buds or scions from which the buds are finally taken, can be cut any time during the winter or spring before starting; this enables the operator to transport them to greater distances, with less fear of injury to the buds, than though taken from the tree during the summer season of budding, July and August. Another advantage is, the bud, if inserted in a seedling of the previous summer's growth, can be put in much higher upon the stock, if desired, than could have been done the July or August preceding, thus saving almost a season's growth in the relative size of the tree.

Among the disadvantages of the mode, we have heard of these, that the buds are not quite so readily handled as when in summer they have a half inch of the leaf-stock attached. Another is, that the bud on starting, is not so firmly attached to the stock as though it had been inserted the summer previous, and where high winds prevail, is more likely to be broken down therewith, during the first of the season's growth. There are some kinds of trees which we have found difficult to graft,—as the "hickory," or shell-bark walnut of New England, that are easily and with the greatest certainty budded by this method. The skillful culturist will avail himself of this method where practicable or desirable, and those of our readers who were not familiar with the practice, may thank our correspondent for bringing the subject before them.

It would please us if more of our patrons would send in their experience and practices, pertaining to the various departments of horticultural pursuits, the aggregate of which would result in a vast fund of useful information to many. Please send forward your ideas and suggestions for the benefit of the "million."

KEEPING PEARS.

THE pear is a peculiar fruit in one respect, which should always be kept in mind, viz: that most varieties are much finer in flavor if picked from the tree and ripened in the house, than if allowed to become fully matured on the tree. There are a few exceptions to this rule, but they are very few. And, on the other hand, we know a great many varieties which are only second or third rate, when ripened on the tree, but possess the highest and richest flavor, if gathered at the proper time, and allowed to mature in the house. This proper season is easily known, first, by the ripening of a few full grown, but worm eaten specimens, which fall soonest from the tree; and, secondly, by the change of color, and the readiness of the stalk to part from its branch, on gently raising the fruit. The fruit should then be gathered —or so much of the crop as appears sufficiently matured—and spread out on shelves in the fruit room, or upon the floor of the garret. Here it will gradually assume its full color, and become deliciously melting and luscious. Many sorts, which, ripened in the sun and open air, are rather dry, when ripened within doors, are most abundantly melting and juicy. They will also last for a considerably longer period, if ripened in this way—maturing gradually as wanted for use—and being thus beyond the risk of loss or injury by violent storms or high winds.

Winter dessert pears should be allowed to hang on the tree as long as possible, until the nights become frosty. They should then be wrapped separately in paper, packed in kegs, barrels, or small boxes, and placed in a cool, dry room, free from frost. Some varieties, as the D'Aremberg, will ripen finely with no other care than placing them in barrels in the cellar, like apples. But most kinds of the finer winter dessert pears should be brought into a warm apartment for a couple of weeks before their usual season of maturity. They should be kept covered to prevent shriveling. Many sorts that are comparatively tough, if ripened in a cold apartment, become very melting, buttery and juicy, when allowed to mature in a room kept at the temperature of sixty and seventy degrees.—*Downing.*

THE ALGAROBA.—The algaroba is a very useful tree in this country,—Spain—nearly related to the sweet locust or honey locust tree of the Southern States. Its pods are, however, larger and sweeter, and contain more than sixty per cent. of sugar. They are broken to pieces, when horses, mules, jacks, and other cattle are fed on them. There is no better and cheaper food for them, and the tree can be planted on the most sterile, rocky and sandy land. I remark, however, that this tree does not prosper where it is not exposed to the exhalation of the sea. All along the coast of Catalonia and Valencia it is never found beyond the first ridge of hills. The shores of our Southern States would therefore be best adapted to make the experiment of acclimating this very useful tree.—*Patent Office Report*, 1859. [Why not California, between the ocean's shore and the coast range of mountains? W.]

Editors' Repository.

We owe an apology to our patrons for the delay that has occurred in the issue of the two last numbers of the Culturist. We are aware of the distrust always occasioned by a lack of promptitude in "coming to time;" and it applies with peculiar force to all periodicals from the press of California—from the daily newspaper to the monthly or quarterly magazine. We say in California, because it is here, if any where on earth, that mutation or change is the governing rule. We can assure our readers, however, that what appears an inexcusable remissness on our part, has not been without good reasons, though we may never publish them. The November number also may be somewhat delayed beyond the proper time—not, however, later than the 10th, we hope; it will be but a *delay*, no failure; after that, we intend that punctuality shall ever be one of its meritorious features.

Without change there can be no progress. In our next number we shall make mention of material changes proposed to be introduced in the appearance and publication of the Culturist, which we are sure will command the unanimous approval of its patrons. We are making every necessary arrangement therefor, and the first of January, 1861, will, we believe, be the dawn of a more rapid progression and brilliant future for the Culturist, if means and indefatigable industry can accomplish it. W.

Frontispiece.—In answer to an enquiry from a Washoe correspondent, who wants to get, on the opening of next spring, an effective steam engine, with as little weight of metal as is possibly consistent with safety, we reply that we have given our attention to the subject; we have examined numerous engines, both steam and hot air, and if the advantages are as claimed for the invention we illustrate, we shall feel amply compensated for the pains we have taken to bring it to notice. The *Scientific Press*, in detailing the advantages of this engine, says:

The invention which we illustrate is an improvement made on Runkel's engine, and patented March, 1860, by Mark Runkel, of New York. The advantages claimed for this invention are, that it is more simply constructed, which causes it to be of less expense, not only in original cost, but likewise in repairs, through wear and tear, that all steam engines are more or less subjected to; and by its compactness and economy of space, it is rendered accessible to many localities where saving of room is an object, thus rendering it far more preferable for all vessels to be propelled by steam. The great reduction in the weight of metal, in proportion to its effective power, is a great item in its favor, not only for steamships, but also engines intended to be transported by water or land, when the freight frequently amounts to a sum approximating the original cost of machinery. It is also claimed for it, that it works with less friction than any other engine.

The introduction of this engine has the approval of several of the most eminent engineers in the United States, and we think cannot fail in becoming one of the most popular in use.

Frederick Frank, of this city, is the agent for this new patent, who will soon be in receipt of one of the engines for exhibition.

State Fair of 1860.—Divested of all prejudice on account of local dissatisfaction, growing out of the location of the late State Fair, it must be admitted by its worst enemies, that the late exhibition was a great success, and grandly illustrated the wonderful progress our State is making in material advancement. It is true that visitors on first going into the agricultural hall, in some instances, expressed an opinion that the display there was not so large as at the previous annual exhibition, and so far as showy store goods were concerned, this was very true, as it was the determination of the Board of Managers, this season, to encourage the exhibition of nothing but the products of California, Oregon, and Washington and Utah territories, and confine these to articles of utility and merit. In fact, the managers while making up their premium list, determined to offer no encouragement to shop-keepers to bring their tinsel gewgaws, for purposes of notoriety and advertisement, and at the risk of having the pavilion less *taking*, resolved that the fair should be what it purported, an exhibition of meritorious articles. In this the records of the fair show they were eminently successful—far beyond their most sanguine expectations.

In the department of agricultural implements, the range of entries cover a far greater list than at any former exhibition, and the beauty, utility and adaptation of the implements to our peculiar agriculture, afford the most satisfactory evidence that we are fast building up a manufacturing interest, which will after all be the great bulwark of labor, and give industrial stability to the State.

In the department of horticulture, the contributions were four times larger than at the previous fair, and from a far greater range of territory, while in the department of grapes and wines, it was of such extrordinary magnitude, as to impress every one at all conversant with the subject of vine culture, that California is making strides in the development of this lucrative enterprise, which will soon make her a great wine exporting community.

Hopes have sometime been entertained, that there were varieties of foreign grapes which could be introduced to open field culture, which would be better adapted to wine making than the California grape, and this year's exhibit of wine, made from foreign sorts, fully confirms that expectation; while the display, side by side, convinces the most dubious, that the richest and most highly prized European grapes, excel all American or the California variety on all localities and under the same treatment. This fact, so fully established by the large exhibit of grapes from so many localities, is worth alone to California vastly more than the cost of the state fair, as it enables persons intending to plant vineyards, to invest their means understandingly, and in such a manner as to result advantageously afterwards.

In the matter of cured meats, the contributions to this department establish beyond all peradventure, that this can be done in our climate at all seasons of the year, and as successfully as in any other country.

Then the gallery of fine arts clearly indicated that although our people are busied with the necessary labors of a pioneer life, yet they find moments to indulge a cultivated taste and improve a high order of artistic skill. But dismissing the agricultural hall from our mind, let us consider the exhibition of Stock.

This part of the show was a hundred and twenty-five per cent. greater than last year, and may truly claim to have been the great feature of the fair. To the thoroughly practical man, it was not the large amount of stock on exhibition that made it remarkable, it was the quality

of the animals displayed that created so much interest. It has been a query as to whether thorough-bred or blooded animals would improve or deteriorate in this climate, and stock fanciers have watched the animal developments made by the exhibit at each succeeding fair with great solicitude. As to whether thorough-bred animals will degenerate or improve in California, there need be no further anxiety. Take the short horn herd of R. J. Walsh, of Colusi, for an illustration—this being the first lot brought into the State—and we challenge the world to equal his California bred Durhams; and the result of the state fair shows that our stock raisers need no longer send to the Atlantic States for pure blood animals to breed from, as this gentleman and others can soon supply a very large demand for thorough-breds.

In the department of horses adapted to the various wants of the community, the display was really wonderful, and the admiring throngs testified their approbation whenever an opportunity offered, and although there was much to admire in the various departments of the fair, it was clearly settled that horses are the greatest feature of attraction. Indeed, it is a horse era in our Golden State, and we hope next year to see the same families of Rattler and Billy Cheatham colts pitted against each other, and with an added year's growth we predict some of them will prove their blood on the course. F.

Sacramento Wines.—During the late State Fair, our attention was called to numerous samples of wine from grapes grown in the vicinity of Sacramento city. Among these were the wines from the vineyards of Messrs. J. Knauth and A. P. Smith, the former located near the old fort, and the latter at the well-known "Pomological Gardens," on the American river, about three miles from the city. Mr. Knauth has been for several years a successful florist and fruit grower, and his acquaintance with the growth and cultivation of the grape and manufacture of wine, he brings with him from "father land;" and yet, though he finds his previous knowledge of wine management of service to him here, he admits that a different treatment of the vine in its planting, pruning and training is required for a California climate and soil. And further, that a wide difference exists in the fitness of localities for the production of the finer wines.

As successful as has been his practice, in the growth of the grape and the manufacture of wine in his present locality—and we have seen no purer or better wine in the State—he has become fully convinced that higher lands than those bordering the Sacramento river, are more promising for the production of choice wines. Thus we find him purchasing grounds and planting vineyards in or near Cache Creek cañon, at an elevation calculated to secure him against the ill effects of the damps and frosts incident to low, moist grounds. The grapes will not be as large, he finds by experience, but of higher flavor and yielding a richer wine. We know of no one, as far as our experience goes, who can furnish a purer or more fruity wine than Mr. Knauth, from his cellars a mile east of Sacramento city.

The reputation of Mr. Smith's wines has gone forth, entirely ahead of this notice of the product of Sacramento valley vineyards. His wines have been pronounced of superior character by connoiseurs, at several of our state and county agricultural fairs; and though clearly establishing, in connection with Mr. Knauth, the adaptability of the great middle plains of our state to the production of unlimited quantities of very good wines, we believe the superior brands will finally be found among the foot-hills and lower mountains of the Nevada and coast range, the growth of vines among decomposed rocks and volcanic debris. W.

S. F. B. District Agricultural Society.—The fair of this society, which opens on the fourth or fifth of October, will, we doubt not, from the efforts being made to secure a large attendance of both exhibiters and visitors, prove a highly creditable *first* fair.

A difficulty always attendant upon the organization and first fairs of societies like this is, the

lack of ready means to enable the officers to provide the conveniences for the real and necessary purposes of the fair—as the fitting up of the stock grounds and the building, or renting a suitable building for the exhibition of manufactured articles and the products of the soil—without rendering themselves personally liable for a considerable part of the expense.

We are inclined to believe that the Board of Managers are doing too much in the way of inducing exhibiters to come forward; and especially in the line of *purses* for trials of speed. We cannot see how it is possible that a newly formed society, without aid from the State, or a treasury of their own, filled to repletion, can hope to pay so liberally in purses and premiums as has been offered. We have had some little experience of the lack of interest felt by the masses of the citizens of San Francisco in the success of horticultural fairs; and we know that to secure a *financial* success, this city, instead of being the best, is the worst place in the State for holding an agricultural fair.

We hope, however, with all our misgivings, the fair may prove a perfect success. That there will be a fine exhibit of agricultural and horticultural products, unequalled by any previous fair of the season, we have hardly a doubt; for the counties around the bay, that make up the district organization, are the best in the State for such an exhibit, having been early devoted to grain and fruit growing; whilst the stock on exhibition will be of a superior description, and numerous. We hope the people of the counties outside of the city of San Francisco will give the fair their generous support, by their presence during its continuance, as such attendance—we mean the farmers, with their wives and families—is the only reliable support of agricultural organizations. W.

Honey from the Tules.—On the introduction of the honey bee to California, we early predicted that there would soon be found an increase of bees beyond the amount of pasturage necessary for their support. We based our opinion upon the general prolificacy of almost the entire animal kingdom within our borders—except "Digger Indians"—and a belief that the six months of almost uninterrupted sunshine without rain, would not prove favorable to the production of bee food. Already our prediction, to some extent and in a few localities, has been verified. Parties have found their localities entirely overstocked, and have been compelled to resort to feeding with artificial sweets, or a removal of their bees to distant feeding grounds. But it is ascertained, that to carry bees during the dry season, away from the banks of our rivers, even though at a distance from other bee colonies, helps the matter but little. The fact is that flowers possessing the sweets necessary for bee culture, require water quite as much as does the animal creation. Resort has therefore been had to the tule region or the margin of the tules, where the constant presence of water in the soil, furnishes an uninterrupted succession of bloom of some variety suitable for bees to work among during the entire season of summer.

The honey is sometimes of a darker hue made in such localities, but it seems to possess all the richness and true honey flavor that could be desired. We judge from positive knowledge, for we were furnished by Mr. Harbison, of Sacramento, with several samples of honey, the product of the tules, the bees having been transported to a suitable locality, purposely to test the experiment; and the fact of their success demonstrates, that whilst a great many localities where it would be desirable to keep bees in quantity, will be found wholly inadequate to their maintenance, yet that so vast is the region of tule border within our State, an almost limitless range can be secured for bees by seeking proper localities. W.

Santa Clara Valley Agricultural Society.—The fourth annual fair of this society will be held at San Jose, commencing Tuesday, October 23d, and continuing four days. We acknowledge the receipt of complimentary tickets from the officers of the society, and shall endeavor to

be present during the last two or three days of the fair. The reputation that this society has earned, of getting up the best county fair in the State, will, we doubt not, be fully maintained the present year. Many of the very best animals in the State are owned in that county, and will be on exhibition; whilst for rare, as well as superior fruits, probably no other county as yet is near its equal. There is to be some splendid racing, as some of the fastest horses in the State will contend for the prizes. We predict a grand success. W.

LAW AND COLLECTION OFFICE OF JOHN LIVINGSTON & BROTHER,
New York, September 1st, 1860.

EDITORS CULTURIST:—If you, or your friends or acquaintances, still hold any unpaid drafts, certificates of deposit, or other claims against the late firm of ADAMS & Co., whose extraordinary failure in California, in 1855, for liabilities to the amount of nearly three millions of dollars, brought poverty and distress to hundreds of the most worthy families throughout the United States, we would advise that without further delay you should send such claims to New York for collection. We believe it to be important to all parties holding these claims, that they should cause actions to be commenced upon the same, in the city of New York, as soon as possible, for the reason that our statute of limitation will soon be a bar to their prosecution; and thus all such demands as have not been sued upon will be forever lost.

We repeat, it is our opinion, based upon what we believe to be a knowledge of all the principal facts, that the holders of demands against Adams & Co. have the right to recover judgment thereon against responsible parties here, who should be compelled to pay the same. As evidence that these parties fully believe themselves to be liable, we may add the fact, that they have settled several of such claims as were sued, just at the time the suits were ready to be tried—the course they have heretofore pursued being, to settle actions by compromise only on the eve of trial.

We are also informed that one of the firm has been sent to, and is now in California, for the double purpose of making such representations through the public press, and otherwise, to holders of these claims, as shall have a tendency to discourage and deter them from sending the same forward for prosecution; or, failing in this, to purchase at a small percentage upon their nominal value. We would, therefore, caution you against these artful devices, and at the same time urge upon you the necessity of sending your claims to New York for prosecution.

Hundreds of thousands of dollars will probably be lost, by operation of the statute of limitation, through the neglect of many of the creditors to sue their claims. Only those who shall commence action before the same are barred by the statute, will recover; and it is my belief that all such actions will eventually be compromised and settled.

When transmitting any claim against Adams & Co., give the name, age, residence, and occupation of the holder, together with an affidavit that no part of the demand has been paid.

Very respectfully, JOHN LIVINGSTON.

ADVERTISEMENTS.—The season is near at hand for the sale of nursery stock. Another month, and large numbers will be preparing their grounds for the reception of orchard trees. Already we have been asked our opinion, as to which are the best twelve varieties of apples for a small orchard, to secure a succession of ripening fruit in its season; and also where a reliable nursery stock can be found. Our correspondent complains of the imposition practiced upon him two years since, in the purchase of a lot of peach trees, that were warranted to be kinds that never suffered from the curl leaf. Says he was badly taken in; but will mention no name this time. Who has trees to sell true to their labeled names?

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending Aug. 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0, calm to 10 a hurricane.

By Thos. M. Logan, M. D.

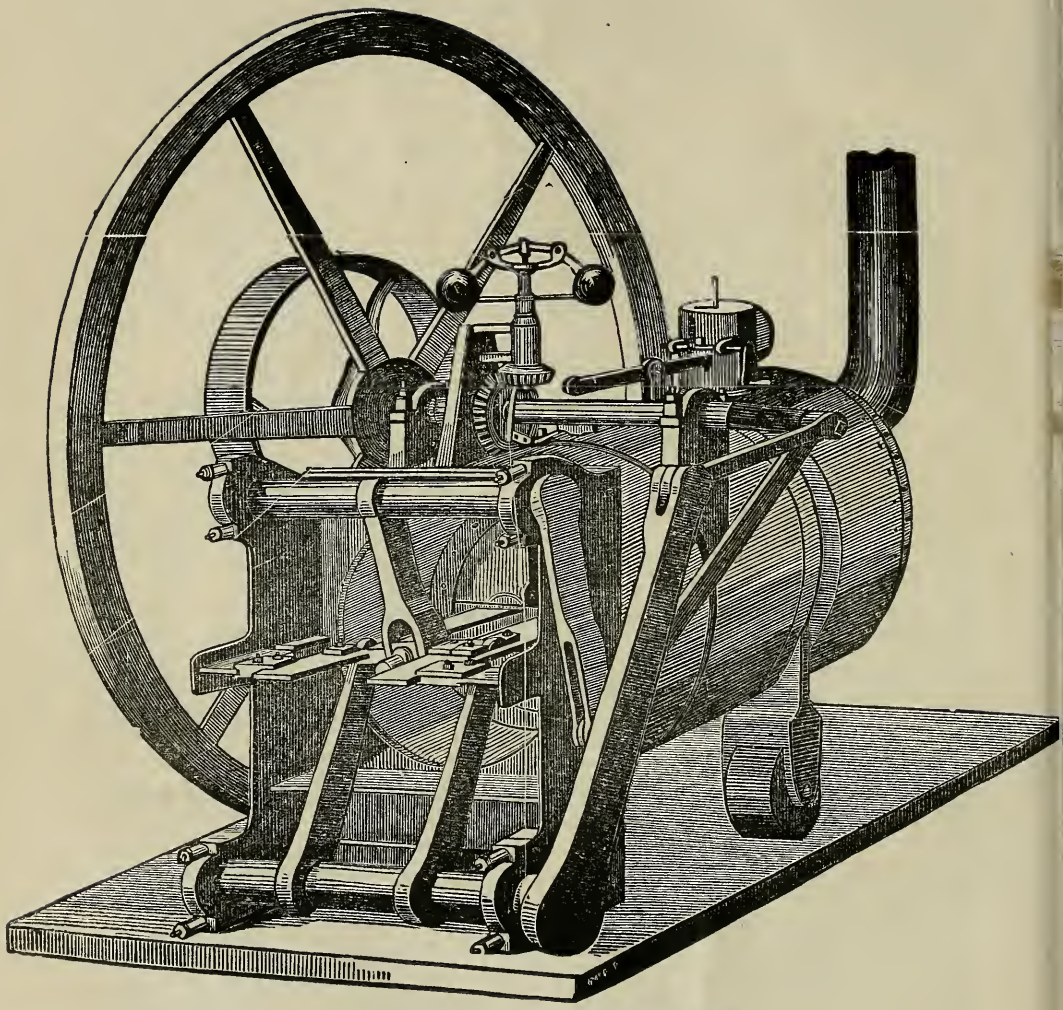
AUGUST, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	29.967	29.943	29.928	29.967 inches.	— 0.073 inch.
" Minima	29.703	29.661	29.650	29.650 "	— 0.055 "
" Mean	29,831	29.804	29.789	29.808 "	— 0.079 "
Thermometer, Maxima	74.00	90.00	80.00	90.00 deg.	— 2.50 deg.
" Minima	62.00	69.00	66.00	62.00 "	+ 3.38 "
" Mean	68.19	79.61	72.71	73.50 "	+ 3.50 "
Force of Vapor, Maxima	.532	.623	.651	.651 inches.	+ .048 inch.
" " Minima	.399	.397	.409	.397 "	+ .049 "
" " Mean	.445	.486	.504	.478 "	+ .018 "
Relative Humidity, Maxima	73.00	67.00	75.00	75.00 per ct.	— 4.62 p. ct.
" " Minima	50.00	33.00	43.00	33.00 "	+ 4.51 "
" " Mean	64.84	49.32	62.52	58.89 "	— 4.65 "
Number of Clear Days	22	25	23	23 1-3 days.	— 1-3 days.
Number of Cloudy and Foggy Days	9	6	8	7 2-3 "	+ 1-3 "
Number of Rainy Days	.....	.....	.....	0 "	— 2-3 "
Quantity of Clouds	0.5	0.3	0.3	0.4	— 0.9
Quantity of Rain and Fog	.....	.....	.....	0.0.....	0.00 inch.
1st Days and 2d, Force of N. Wind..	2 | 1.5	4 | 1.2	0 | 0.0	2 | 0.9	+ 1 | 0.0
" " N. E. Wind.	3 | 1.3	0 | 0.0	0 | 0.0	1 | 0.4	+ 2-3 | — 0.4
" " E. Wind....	2 | 1.0	0 | 0.0	0 | 0.0	2-3 | 0.3	00.0 | — 0.3
" " S. E. Wind..	8 | 1.5	0 | 0.0	5 | 2.6	4 1-3 | 1.4	— 5 1-3 | — 0.2
" " S. Wind....	15 | 1.6	7 | 2.4	11 | 1.8	11 | 1.9	+ 1 2-3 | — 0.2
" " S. W. Wind.	1 | 2.0	7 | 2.1	11 | 1.6	6 1-3 | 1.9	— 1-3 | — 0.2
" " W. Wind...	0 | 0.0	8 | 1.2	4 | 1.5	4 | 0.9	+ 2 1-3 | — 0.8
" " N. W. Wind.	0 | 0.0	5 | 1.2	0 | 0.0	1 2-3 | 0.4	0.0 | — 0.5

Thermometrograph.

	Deg.		Deg
Highest Reading by day on the 16th	92 00	Mean of all Highest Readings by day	83.12
Lowest Reading by night on the 28th	54.00	Mean of all lowest readings by night	60.06
Range of Temperature during month	38.00	Mean daily range of Temperature during mo.	23.06

Remarks.—Commenting upon the decline of temperature in June last, we remarked, that in order to make up the deficiency, and to bring up the mean annual temperature to the constant of sixty degrees, we must necessarily experience much sultry weather during August and the fall months. Thus far, this prediction has been verified. August has proved the hottest month this year; and although the maximum has never attained, at any time during the summer, the highest of preceding years, nevertheless, the thermometer has ranged uniformly high this month—exceeding the average, as seen in the table above There have occurred, however, several cool changes to temper the extreme sultriness and stagnation of the atmosphere; and at one time (the night of the 24th) heavy cumuli clouds, accompanied with strong wind, presented every indication of approaching rain. It did not rain, notwithstanding; but at this very period heavy showers fell at Yreka, and the thermometer here sank twenty-eight degrees in the course of eight hours.

Another auroral display was observed on the morning of the 7th, between the hours of one and two. It was of a more uniform crimson color than that of July 4th, and although not so brilliant, extended over a wider space. Its eastern extremity was a little to the east of the bright star Capella, in the left shoulder of Auriga, and its western rested apparently on the hams of Ursa Major. It reached from about four degrees above the horizon to near the same distance from Polaris, and presented very much the same appearance as the reflection from tules on fire. This, the second aurora seen this year, makes only the ninth recorded during over eight years' observations. From a series of carefully compiled observations by Professor Loomis, and projected upon a chart, recently published in Silliman's Journal, it appears that there is considerable uniformity in the distribution of auroras over the earth's surface, and that on an average, at Washington, D. C., nearly our parallel, nine occur annually. Near the parallel of forty degrees, ten auroras occur annually. Near the parallel of forty-two degrees, the average number is twenty; near forty-five degrees the number is forty; and near the parallel of sixty-two degrees, auroras are seen almost every night. The reason why so few have been recorded in our register is, doubtless, because they have occurred when not looked for, and at hours of the night when most persons are asleep. As it is important that the register of this phenomenon should be as complete as possible, it is desirable that any one accidentally observing it in this locality, would either send us a note of the same, or publish an account of it in some newspaper, under a responsible name, and forward a copy of the same to our address.



ERICSSON CALORIC ENGINE.—See page 233.

THE CALIFORNIA CULTURIST.

NOVEMBER, 1860.

PLOWING FOR WHEAT.

A DIVERSITY of opinion still exists, and probably always will, in relation to the depth that soils should be plowed for the production of wheat. Doubtless a great deal depends upon the nature and quality of the soil, as regards its fertility, as well as physical condition of both surface and subsoil. In the new and fertile soils of California, even the most superficial plowing, if properly done, will be found oftentimes to yield larger returns in wheat, than the most favored soils in other climes; and yet the policy of a continuance of such a system may well be doubted. All former experience goes to prove that deep cultivation is the great renovator of worn-out soils; but does it follow from this, that we must also plow deeply, at a great expense of animal power, when no such renovation is necessary or desirable? On very many of our alluviums and adobe lands, the straw of wheat, from its rampant growth, becomes a nuisance in many respects, and as deep plowing in river alluviums almost invariably adds to the growth of the straw, rather than the yield of grain, the utility of the practice may well be doubted, particularly upon our virgin soils.

The error of the practice—if it be an error—lies in supposing it necessary to treat our new and unworn lands with the same system that is everywhere applicable to impoverished soils. It is the lack of discrimination between soils of different qualities, that causes so great a difference of opinion among our farmers, as to the benefits actually derived from similar practices. One, whose grain lands are river alluvium, finds that plowing to a greater depth than five inches, is productive of an increase of straw, but not of grain. A six years' cultivation of the same soil, demonstrates that another inch can be added to the depth of former plowings with advantage, the reason for which must be apparent to any one—the gradual impoverishment of the surface soil; and as this is annually going on, an increased depth is given, until the

maximum of say ten inches is reached, or such a depth that the plowing deeply to secure fertility, costs less than to obtain the same results from the application of manures.

With farm labor at present prices, it is, without doubt, the best policy to maintain the fertility of our soils, by deepening the furrow, at the expense of animal, rather than man power. Upon some of our soils, however, there is a limit to the depth of the furrow, for the best yield of wheat, whether upon new or old land; and this arises from peculiarity of growth or adaptation of soil and subsoil to the proper expansion and maintenance of its roots. Because lands are put in the best possible condition for a corn or root crop by deep and frequent plowings, it does not follow that the same is true of lands prepared for onions or wheat. The best wheat growers in the Atlantic states and England, have long since and repeatedly demonstrated, that land can be plowed too deep and made too loose and light for wheat; it vegetates best, when sown in a finely pulverized soil, at a depth not exceeding three inches, and matures best upon a firm, compact bottom soil. If wheat lands are plowed deeply for the purpose of covering more effectually green crops or coarse manure, it should never be done in California, in the summer or autumn of the same season the wheat is to be sown, even if the land was moist enough to admit it. Nothing will compensate for such treatment of wheat lands here, and secure the hope of an average yield, but a thorough rolling with a heavy roller, a second plowing, and a perfect pulverization of the surface, not exceeding five inches in depth, as a preparation for the seed.

It is the opinion of several of our most successful wheat growers, that to plow under any description of coarse manure, or even stubble, works a positive injury, in very many cases, to the succeeding crop; and it occurs to some who, not careful in tracing effect back to cause, attribute many a partial failure to other than the proper cause. The theory, that all manures ought to be applied to the surface, is not without its firm adherents and supporters; and if there is any soil to which it is entirely applicable, it is in California, where vegetable matter, though buried in the soil, seems never to decay, or but very slowly; the reason for which doubtless is, that in summer, it is too constantly dry, and in winter, too cold and constantly wet to favor decomposition. Where the straw or manure is applied to the surface, it acts as a mulch, and protects it from the sun's rays; and as it receives the dews and feels the effects of any moisture that may prevail in the atmosphere, its decomposition is quite as rapid as when laid under the furrow.

But setting aside the arguments for manuring either upon the surface or under the surface, we believe there has not been sufficient attention given to the effects produced upon the different wheat soils of California, by deep and shallow culture. We are not the advocate of shallow plowing, except where the crop produced is positively improved by such culture. We have advocated the growing of deeply running roots in California soils and climates, and do still; but, at the same time, we are of the opinion that, for some products, under our six months almost tropical sun, the soil can be made too light and porous, at too great a depth.

CRANBERRY CULTURE.

EDITOR CULTURIST:—I am about making an attempt at cranberry culture. I believe I have just the best three acres of land for this purpose in the whole state, if it be true that they will grow and produce in a soil almost entirely sand. How can I manage to get a start of plants? Will they grow from the seeds of such as we find in the San Francisco market? Please let me hear from you or the CULTURIST on this subject. Yours, BODEGA.

REMARKS.—Sand alone will not produce cranberries; but sand and water will; so that, if you are situated where you can keep your sand saturated with moisture to near the surface, you have doubtless a good cranberry soil. We shall be in receipt of plants of two or three varieties, from one of the most successful of eastern cranberry culturists, when the proper season for transplanting arrives. We can furnish you with a limited number of plants if you desire. Cranberries can be grown from the seeds; but the nicest care and skill is requisite to get them to vegetate. The editor of the American Farmer, on the subject of the cranberry and its culture, says:

We have received several inquiries, some of which indicate a desire to go rather largely into the culture of the cranberry. One correspondent, entirely unacquainted with the matter, writes for information, and proposes to plant as much as two acres. We see no reason whatever why any one who cultivates a bed of strawberries should hesitate to spend one or even five dollars in the purchase of cranberry plants. While the fruit is itself hardly less valuable than the strawberry, its keeping qualities are such that it is easy to have them fresh during six months of the year as to have the strawberry one month. We believe, too, it will be found quite as easy to cultivate. This, however, is yet to be tried, and therefore we would advise no one to go to much expense in the experiment. In the Eastern states, where there have been numerous reports of crops at the rate of two hundred to even four hundred bushels per acre, when the berries are worth two, three, and four dollars per bushel. From our own observation we believe two hundred bushels to the acre quite possible, but we should not expect it as at all probable. The half of that, under favorable circumstances, at four dollars per bushel—the lowest price, we believe, of last season, in Baltimore—is quite enough to tempt a fair and careful experiment on a small scale. A year or two will determine the probability of success, and the person who plants some now, will then be able to enlarge his plantings from his own grounds. They increase by runners as rapidly as the strawberry.

We promised, last month, to give the necessary instructions for the preparation of ground and planting. Let it be remarked, in the first place, that the cranberry seems to get its nutriment almost exclusively from air and water. It flourishes best in pure beach sand, which is loose and open enough to admit the atmosphere freely, provided its roots may reach an ample supply of water. Bearing this in mind, we have a guide to our judgment in the selection of soil and in its due preparation. Pure sand is not the only soil in which it may be profitably grown. We have accounts in the

agricultural papers of their producing well even in quite dry uplands. There is no doubt, however, that the nearer we can approach to the coarse sand for a soil, the better. A close, compact soil, under any circumstances, will not do; but any light, friable soil, not very dry, will answer. They grow well on peaty, boggy meadows, and this, next to the sand, is the best soil for them. In order to give them proper attention, such ground should be so drained that the water, during the growing season, will not be within twelve inches of the surface, and a dam made to flood the ground, if practicable, during the winter. The flooding, though desirable, is by no means essential. The surface turf should be entirely taken off this peaty land before planting. On any soil less favorable than this light, peaty ground, preparation should be made in advance by carting on to the surface three or four inches of the best sand to be had. The points are, a light, open soil, that the air can readily penetrate, moisture, and freedom from grass.

Mode of Planting.—The ground being put in proper condition as for strawberries, by digging, or plowing and raking, but with no application of manure whatever, mark off the rows at about two feet, and plant at two feet distance in the row. At this distance the plants will soon run together, and in three years should cover the whole ground. This is the point to be gained, when they will take care of themselves and require no further attention. At this distance, ten thousand plants will set an acre; an estimate can be readily made for a smaller quantity. Put the roots of the plants well in the ground and draw the earth well up around. There is no difficulty in rooting them, and the plants are readily packed and transported to any distance.

THE GRAIN BINDER.—The editor of the *Rural New Yorker* gives the following account of the grain Binder:

"But improvements stop only with man's necessity. The reaper was followed by the *self-raker*, and now we have the *binder*. *Sherwood's grain binder* we had seen at several state fairs, but never at work in the field, and we were glad to have an apportunity to see it in operation. So we wended our way to the farm of Mr. Neely, in the town of Chili. Here we found many old practical farmers, who were somewhat incredulous, thinking it almost impossible to bind the grain on the platform of the reaper, and remove it as fast as cut. And yet, we believe all were satisfied on the trial that this, too, can be done. As fast as the grain is delivered by the raker, it is bound by a fine wire and removed from the platform in the very best condition for handling and pitching; as by this system the grain does not pass to the ground until bound, very little is scattered, and the binder has plenty of time to bind and remove the sheaf before another is cut and ready for binding. A fair day's work for a good reaper is about ten acres, and it requires at least four binders to follow the machine, but with this binder one man does the work, making, of course, a great saving of labor."

PRIZE ESSAY ON IRRIGATION.

BY WM. THOMPSON, OF MILLERTON.

For which was awarded the First Premium by a Committee of the California State Agricultural Society, at the Annual Exhibition, held in Sacramento, Sept. 13th, 1859.

"Rura mihi et ugui placeant in vallibus amues
Flumia amem sylvasque englorius."—VIRGIL.

PART FIRST—QUALITIES OF WATER.

AGRICULTURE has ever been the inseparable companion of civilization, traveling with her from east to west, flourishing when she has flourished, retarded when her progress has been interrupted, and sharing with her in her triumphs as one of the most indispensable of the useful arts. At first, both were rude and homely; now, either is more deserving of universal homage. But while agriculture has acquired new accomplishments, knows how to do her work, and generally does it more perfectly, the westward march of empire and the arts, which carried her along with them, has nearly depopulated many of the countries which formed her early abodes, leaving but an enfeebled and degenerate race, who miserably represent their enterprising progenitors in ancient times.

The westward progress of agriculture has taken her into other climates, where other appliances have to be resorted to for the accomplishment of the same object. In the hot and dry valleys of the Euphrates and Tigris irrigation stood prominently forward as the most useful auxiliary of them all. In the moist climate of Britain the principal requisite, to reduce a large portion of land to the most suitable condition, is draining—its apparent opposite. We are thus considerably at loss in regard to irrigation, which once proved of such essential service to countries which have a similar climate to that of our own state. If we wish to learn its use where it was first practiced, we find but the vestiges of ancient works and the retention of obsolete contrivances in the hands of a contemptible people. If we go to Europe or the older states, we find it of but minor importance, and its adoption limited.

Let us resort to science. The petty fisherman, who "paddles his own canoe" around the margins of his native lake or bay, needs neither sextant nor compass. Every hillock is a landmark, and every tree or rock a guide. They are, all and each of them, familiar and old acquaintances. Take him out into the middle of the ocean, where the enlightened captain directs his vessel with nothing but the sun and stars to look to, and what would become of him? Yet are these latter as sure and certain guides as the other, and far more extensively useful.

Water performs several important duties in promoting vegetation. First, it is greedily absorbed by plants, and is so far indispensable; secondly, it regulates the temperature both of the soil and of the atmosphere; and thirdly, it dissolves and holds in solution many substances which enter with it into the organs of plants, and are essentially necessary in their construction. The first assumption requires no proof; the second, but little. Every one knows that water forms a conducting medium

of heat, which possesses greater powers of resistance than the soil; that it is penetrated by it more slowly, and more slowly parts with it, and that the evaporation which is constantly taking place from moist soils and sheets of waters cools or warms the air in proportion to the amount of the vapor disengaged, and the difference between the water evaporated and the atmosphere into which it escapes. The second duty is, therefore, of no small importance in irrigation. The third is more important still, and the capability of water to discharge it is manifest. By a little reflection, we conclude, from *a priori* reasoning, that the atmosphere, which forms a general receptacle of all the gases, vapors, and odors, which are daily and hourly escaping into it, must sooner or later part with them, and that they, having an affinity for water, get connected with it in its vapory state, or at all events, that the atmosphere gets cleansed and purified of such foreign substances by descending showers, by which they are carried along. The question does not admit of doubt. Liebig has discovered ammonia in snow-water, and Pereira, Brande, and Timmerman, traces of several salts, and even metallic oxides, in that of ordinary rain. Such is the natural condition of water when it first descends as rain or snow, at which time it contains the smallest amount of fertilizing qualities. Some portions of rain-water percolate into the soil and rise again at a lower level; others sweep the surface, either immediately after the fall of rain or as melted snow. The water of springs partakes of the qualities of the rocks through which it percolates—before it makes its appearance on the surface—and which it gradually abrades, disintegrates and dissolves, by its continuous operation. Water which is formed from the immediate fall of rain or from melted snow, contains only few mineral impurities; but, from its washing the surface of the ground instead of entering into it, is richer in vegetable matter. The limpid, and apparently pure water of autumn contains a much greater proportion of mineral matters in a state of solution, in which they are more immediately available by plants, than the muddy floods of winter and of early summer. Both kinds act beneficially in promoting vegetation, but not in the same manner.

There is another kind of muddy water, however, which is extremely rich in partly dissolved, and constantly dissolving, mineral matters, although I am not aware of its entering into any of our California rivers—water from glaciers. These form the outlets of the great masses of snow which accumulate in the higher Alps, and similar situations in other countries, where the hight of the mountains and temperature of the climate admit of such accumulations and glacier formations. They are so many frozen rivers, slowly, but steadily, moving onwards, and carrying with them blocks of stone of enormous size. "For the moving of large masses of rock," says Professor Playfair, "the most powerful agents, without doubt, which nature employs, are the glaciers; those lakes or valleys of ice, which are formed in the highest valleys of the Alps, and other mountains of the first order. These great masses are in perpetual motion, undermined by the influx of heat from the earth, and impelled down the declivities on which they rest by their own enormous weight, together with that of the innumerable fragments with which they are loaded." As the ice melts, the immense bowlders of rocks, scattered over their surface, are tumbled into crev-

ices, and wedged into fissures, in which they are carried along, grooving the rocks which form the sides of the glacier valleys, in their passage, and grinding, or helping to grind, like so many immense millstones, the smaller fragments between them and the bottom, into an impalpable paste, which mixes with the bottom matter. Even the pulverized fragments adhering to the bottom of the ice may be presumed to resemble, in their effects, the emery powder of the lapidary. "There can be no doubt, from observation," says Professor Forbes, in his valuable "Travels through the Alps of Savoy," "that a glacier carries along with its inferior surface, a mass of pulverized gravel and slime, which, pressed by an enormous superincumbent weight of ice, *must* grind and smooth its rocky bed. The peculiar character of glacier water is itself a testimony to this fact. Its turbid appearance, the same from year to year, and from age to age, is due to the impalpable fine flour of rocks, ground in this ponderous mill, between rock and ice. It is so fine as to be scarcely depositable. No one who drives from Avignon to Vancluse can fail to be struck with the contrast of the streams, artificially conveyed on one and the other side of the road, in order to irrigate the parched plains of Provence. The one is the incomparably limpid water of Petrarch's fountain; the other an offset from the turbid Durance, which has carried into the heart of this sunburnt region the unequivocal mark of its birth amidst the perpetual snows of Monte Viso. This is the pulverizing action of ice.

These surmises in regard to the *manner* of the operation of glaciers in grinding rocks, may be mere theory. The *fact* of the grinding does not admit of being disputed. We see the outward machinery and frame work of the mill, and find the impalpable, and scarcely depositable sediment of the muddy waters which issue from it, as therein manufactured. How the work has been done is of little consequence.

Rocks differ in their chemical composition, and so must all the water of different places, whether it filters through the rocks, or the rocks have got ground and been blended with the water. To be of most service, the water used in irrigation should supply the natural deficiency of the soil. Thus, a soil chiefly formed from the disintegration of granite, which generally contains but little lime, would be much benefitted by being watered from a stream which has its rise in limestone or chalk; while a soil formed from sandstone, and naturally deficient in potash, would be proportionately benefitted by being irrigated with water which has been percolated through granite. Where the composition of the soil and that of the water applied are approximately identical, the chemical benefits resulting from irrigation are confined to a supply of the matters which are abstracted by crops, so far as the water used is capable of affording them; the natural deficiencies of the soil must be supplied from some other source.

To this cause may be partly ascribed the want of success in the following instance, mentioned in "Young's Annals of Agriculture:" "Mr. Orchard, of Stokes Abbey, Devonshire, has two meadows. These meadows are situated on the side of a hill, their aspect nearly south—the superstratum, a fine rich loam, from eight to ten inches deep, on a sub-stratum of strong yellow clay. No difference whatever can be seen by the naked eye in either the upper mold or the sub-stratum, or in the herbage

growing on the surface of them, except that in the lower part of one a few rushes appear, in consequence of some small springs which rise near them, but the water from them is not sufficient to render any part of the land poachy. At the head of the two meadows is a large pond, formed by a collection of small runs of spring water rising near it, and which is also improved by the wash of a small farm-yard adjoining, which, of course must add to its efficacy as a manure. When this water is thrown over one of the meadows it produces the richest herbage in abundance, and this field is regularly mowed for hay. On the other meadow, though repeatedly tried, it produces no good whatever."

The principal cause of the failure in this case, however, appears more evidently to have resulted from the impervious nature of the subsoil, and from the land requiring to be drained. However paradoxical it may appear to some, the proper drainage of watered meadows is even more essential than that of other fields. I have seen so many instances of failure in Scotland, when this fact has been overlooked, that I confidently assert what I say. Farmers not sufficiently acquainted with the principles of vegetable physiology, would conclude that, if certain fields were naturally too moist, they might be irrigated with greater ease and a more limited supply of water. The result, in every instance, was an abundant crop of rushes, and similar plants of almost as little value; but scarcely any of the more desirable grasses, which require a freer admission of air to their roots than they can procure in soils at all times wet. (See page ——). Besides, it is a mistaken notion that the water used by plants is only required by them in the state in which we drink it. It has to be prepared and adapted to meet their several wants—some of them requiring its alteration to a greater extent than others. By means of the saline matters contained in the water and the soil, plants are furnished with hydrogen, which we find forms a principal ingredient in all of them, entering, in combination with carbon and oxygen, into woody fiber, gum, sugar, starch and oil. To effect the separation of the elements of water a certain amount is needed, whether it takes place in the plant or the sap undergoes a change before it enters it. All the circumstances of the case combine to show that the separation partly takes place in the soil. In fact, it must do so when the temperature admits of it. Where the soil is over-saturated with water it is generally much colder, and such a change must consequently take place with difficulty, if at all.—Hence, the more valuable plants would languish, and inferior plants usurp their place. The art of irrigation consists in having the soil at one time dry—at another wet. The former state is as necessary as the latter.

The waters of different places differ in the proportion of their components more frequently than in the components themselves, the same as soils do; and rivers which collect their waters from different sources, so far as their united branches have been analyzed, are found to be very much alike. Dr. Bostock found in ten thousand parts of the water of the Thames, after most of its mechanically suspended matters had subsided, about one and three-fourths parts of foreign ingredients, as follows:

Organic matters	0.07 parts.
Carbonate of lime	1.53 parts.
Sulphate of lime	0.15 parts.
Muriate of soda	0.02 parts.

In an equal quantity of the waters of the Clyde, Dr. Thompson found nearly one and one-third part of solid matters in a state of solution, viz:

Muriate of soda	0.369 parts.
Muriate of magnesia	0.305 parts.
Sulphate of soda	0.394 parts.
Silica	0.118 parts.

The little Itchen which runs past Winchester, the waters of which are famed for their irrigating qualities, has its rise, as have also its tributaries, among chalky downs, and consequently it contains a large proportion of lime in solution. In ten thousand parts of its water, two and one-half parts of solid matters were found, as under:

Organic matter	0.02 parts.
Carbonate of lime	1.80 parts.
Sulphate of lime	0.72 parts.
Muriate of soda	0.01 parts.

Rivers which rise among granite mountains, on the other hand, contain a large proportion of potash, a principal ingredient of plants, which scarcely enters into the composition of the water of English rivers, and does not appear to have been detected in any of the above analysis. But in their little variations, every similar analysis, or but partial examination, all goes to confirm the remark of Bacon in regard to the effects of water on meadows, that "it acts not only by supplying useful moisture to the grass, but likewise by carrying nourishment dissolved in the water."

The waters of the same river differ considerably, at different places, in their effects on vegetation, owing to other causes than the accession of tributaries of another character, or the nature of the soils to which they are applied. Water gets softer in its course, and becomes less suitable for irrigation, either from having deposited a portion of its saline matters, or from their becoming less active in their character by exposure to atmospheric influences, or from both or more causes combined. In the absence of more widely extended analysis, we are left, but half enlightened, to grope for the true cause, or causes, among inferences to be deduced from the certainties of abstract science. The fact that water not enriched from extraneous contributions is less suitable for irrigation, is well known to every practical farmer who has at any time been engaged in this branch of husbandry. Water cresses grow luxuriantly in almost any spring water not absolutely mineral; in river water they grow with difficulty, if at all. Mr. Simmons, of St. Croix, near Winchester, for a number of years enjoyed the exclusive use of a branch of the Itchen for watering his meadows. A farmer higher up the stream concluded to use it for a similar purpose before him. The result was, although Mr. Simmons received the water very little diminished in quantity, its quality was conspicuously deteriorated, as he found to his loss. Did this proceed from the plants and soil of the upper field having appropriated, in undue proportion, its more fertilizing ingredients, by substracting them in greater quantities than those which were less useful? Or did it proceed from the water getting less energetic in its character, by being exposed in a broad sheet as spread over the surface of the upper meadow? Or from some deleterious substance with which it had got connected, the exudations and excrementitious matters of the plants which grow on it? The experiments of Saussure, when he put living plants into a mixture of various

salts, showed conclusively that they possess selective powers, and do not absorb them indiscriminately without regard to their qualities. The plants of our upper meadow having the first choice, it would seem had taken an unfair advantage; that they were capable of doing so, his experiments indisputably prove. (See my Premium Essay on Alkaline Soils, Tule Lands, and Salt Marshes, in the society's report for 1857.) As to the second query: The water of both springs and rivers contain lime—that of the Itchen conspicuously so—than which no earth more perceptibly undergoes chemical changes. When burnt, carbonate of lime parts with its carbonic acid, losing about forty-four per cent. of its weight by the operation, but which carbonic acid it gradually regains by exposure to the atmosphere. When water is thrown on this quicklime it absorbs it greedily, and gets much heated. It is now hydrate of lime, and contains about twenty-four per cent. of water. When quicklime is exposed to the atmosphere, it absorbs from it about twelve per cent. of carbonic acid, thus constituting a mingled carbonate and hydrate. In the form of a carbonate it is scarcely soluble; as a hydrate, it dissolves easily. Besides, when a strong acid is put on carbonate of lime it parts with carbonic acid, and combines with a large proportion of oxygen (when oxygen forms the acidifying principle of the acid) the variations in the alkalinity of its character, in the new state, depending on the quantity of oxygen, or chlorine, which the acid contains, modified by the nature of its former base. That which is contended for in this case is, that, in consequence of lime possessing these properties, limestone and chalk may part with a portion of their carbonic acid and become more soluble; that water containing such lime in solution would be apt to deposit when spread in a thin sheet over the ground, in consequence of the lime being thus enabled to regain the carbonic acid previously given out, and that what it did not deposit might become less energetic in its character from meeting with acidulous matters of the soil, as well as by absorbing carbonic acid from the atmosphere. As to whether the excretions of plants are injurious to other plants of the same species, when mixed with their aliment, it is a fact well known to gardeners, that "the water in which bulbs have been cultivated, will not well support other bulbs, although such impure water is found to be more grateful than clear water to plants of another species." Now, if we may answer in the affirmative in regard to each of our queries, taken separately, we naturally conconclude that the influence of these damaging causes in deteriorating water, when combined, must be considerable, and that what took place on the adjacent meadows on the Itchen, from the water being thinly spread, must have taken place, to a certain extent, in regard to all river water at a distance from its source, the length of its course having exposed it, though in a greater body, to similar influences, and sometimes in an equal degree.

But if nature withholds from those who dwell in the lower valleys, on the banks of rivers, the enviable water of the mountains, she has given them a richer soil, which is more easily stimulated. Besides, if river water gets poorer in its course in respect to mineral ingredients, it gets richer in organic matters. The former it brings with it from the bowels of the earth; the latter, being of more superficial origin, it

mostly collects as it runs. The quantity of the latter, however, which is found in a state of solution in rivers, is so small that its increased supply is not sufficient to counterbalance the advantages of spring water in other respects. It is when rivers are in flood that they more than compensate the soils on their banks of any slight deficiencies in their water at other times in *warping* them while they irrigate them, and thus continuously building up the mixture of scum and sediment of which they are composed.

[PART SECOND GIVEN IN OUR NEXT]

PRIZE ESSAY ON IRRIGATION.

BY W. WADSWORTH.

For which was awarded the Second Premium by a Committee of the California State Agricultural Society, at the Annual Exhibition, held at Sacramento, Sept. 13th, 1859.

TO secure a thrifty, vigorous growth of vegetation, be it grass, plant, flower, fruit, or tree, has ever been the great aim of soil culturists; and yet the object can never be attained, be the soil ever so fertile, unless it contains, during the growing season, a certain supply of moisture. Indeed, water is of itself one of the first great elements of fertility, besides being the medium by which the constituents of all vegetable growth are conveyed to their proper place. Seeds cannot germinate, and vegetable growth cannot be sustained without it.

The simple question, then, as to the adaptability of irrigation, under any circumstances, to California soils, can be easily determined. Have we any soils that, during the growing season, lack the necessary moisture for the fullest development of their vegetable products? If we have, then the advantages of irrigation are undeniable; for if the soils do not contain naturally sufficient moisture, it must be supplied artificially, or the culturist must be content with partial or imperfect crops. In no country where a judicious system of irrigation has been once put in practice, was it ever abandoned, except with the extinction of its people. On the contrary, in the valley of the Nile, the oldest irrigated country we have any record of, except the garden of Eden, irrigation is as necessary and as useful now as it was in the days of the Pharaohs. It was the wealth of Egypt then, and it is now.

That there are fertilizing properties in all fresh waters used for irrigation, requires no better proof than this: That whenever judiciously applied, lands are kept in a constant state of fertility for ages, without the application of any other fertilizer. The purest water obtainable from either springs or streams contains considerable quantities of soluble salts, themselves fertilizers, and in the very condition adapted for the food of plants; and this is the reason why irrigated lands are the only ones that, without the application of any other fertilizer, can bear a constant annual removal of their entire product without deterioration. It is evident, therefore, that irrigation is a direct and positive fertilizer, as well as moistener of soils.

Vegetation may derive some portion of its substance from the atmosphere; but in

quantity so small as to be almost unappreciable. That the air has a direct influence upon the growth of plants through their leaves or lungs, is highly probable, and even demonstratable; so has the air a direct influence upon animal life; but no one would ever think of living upon it alone. A large amount of moisture is constantly required to supply in all growing plants the loss of juices by evaporation from the leaves. That such evaporation is constantly going on, requiring in all plants with leaves a far greater quantity of juices than barely sufficient to carry the constituents of vegetable fiber to their proper place, is evident from the rapidity with which any portion of a growing plant or tree will wilt when detatched from its roots and its leaves left upon it; but detach its leaves, and the wilting process proceeds much more slowly.

An adequate supply of moisture is also necessary, as an auxiliary to a proper decomposition of such vegetable manures as the soil may contain, whether supplied artificially, or the natural product of the same. Heat, air, and moisture, combined, are powerful in aid of a rapid decomposition of other substances than mere vegetable manures or fiber; they act upon the solids, setting free carbonic acids and ammonia, which uniting with the lime, gypsum, potash, and other soluble salts contained in soil or imparted to it by the waters of irrigation, are productive of the essential requisites of a vigorous vegetation. The effects of heat, air and moisture, being more apparent upon and near the surface of the soil than beneath it, rain or irrigation is necessary to convey the product of such decomposition to the roots of plants, or they could derive no benefit from it.

It is evident, therefore, that in a country where we have no oft-recurring rains during the season of growth, however much of fertility the surface soil may engender by decomposition or contain by application, it cannot reach the roots of trees or plants without the aid of water as a solvent, as well as a carrier. This being true, it is a question whether any supply of water from deep beneath the surface and passing upwards to sustain vegetation, can be as well adapted to its sustenance as though conveyed to the roots by means of rains or irrigation through the more fertile surface soil. Nature always places her manures on the top, and fertilizes her soils by direct action of the rains upon them. Shall we follow the same rule or reverse it? Shall we put our manures below the subsoil, in order that the ascending moisture from deep beneath may in its passage upwards convey its fertilizing properties to the roots?

Recent scientifically conducted experiments, both in the Atlantic states and Europe, are going far to prove that manures have been buried too deeply; that to derive the greatest benefit, either from long and coarse, or from concentrated fertilizers, they should be subject to the action of heat and moisture for decomposition, and then to washings from rains or irrigation; as water alone has the power to convey the fertilizing properties to the roots.

It is frequently observed that the application of coarse vegetable manures beneath the surface of our soils, after the spring rains have ceased, are of little or no advantage to the growing crop, and often a positive injury, by rendering the soil dryer than

it would have been without it. In all such cases, had an adequate supply of moisture which the rains did not furnish, been supplied by irrigation, both objects would have been attained, a decomposition of the manure, and the consequent fertilization of the soil. It is evident, therefore, that irrigation judiciously applied under our desicating summer atmosphere, must be attended with good results, upon a great variety of soils.

It is objected to by some on account of its tendency to fill the land with weeds and coarse, rank herbage; and yet this is one of the strongest arguments in its favor. The vigorous growth of weeds, or other herbage, the result of irrigation, upon lands that never grew them before, is proof of its fertilizing and life-giving tendency. Girardin, on Irrigation, says: "It is, without doubt, the most simple and economical means of increasing the fertility of a field, conveniently situated, because it affords fodder in abundance, and, in consequence, a larger supply of manure. For this reason are lands flowed and enriched by streams, the only ones which allow of a continued exportation of their products, without suffering deterioration."

It needs no further argument to prove the advantages of irrigation; but of its application, the time, mode, and quantity of water, much can be said; as upon these and their conditions, depend the advantages to be secured, as well as injury done; for irrigation may be productive of injury as well as good. A field in which the product is grass or clover, and intended for hay or pasturage, would require an entirely different application of water, and at a different time, from one devoted to the production of orchard trees and fruits. There is nothing more certain than this: disrobe our fields of their entire product of grasses at the usual season of cutting for hay, over a large part of California, where now, if herbage is not cut it dries up, and the land remains verdureless of every green thing, till December or January, for the want of sufficient moisture in the soil to maintain it, if such lands could be irrigated immediately after the removal of the crop, and to an extent amounting to saturating, or until the waters of irrigation meet those from below the subsoil, a new, rapid and abundant yield of green herbage would be the certain result, and which can be secured by no other management. Mulching of such lands, even if grass lands could be mulched, would not produce it; no stirring up of the surface soil will do it; nothing but irrigation can secure a green crop of herbage from June to January. It is not meant by this that irrigation is to be resorted to in order to secure a continuance of green pasture, or a second crop of hay, upon lands sufficiently moist to produce them without; but it is that there are vast tracts that might be kept in perpetual green by the introduction of the proper grasses and a system of irrigation adapted to their growth, that never will produce any green thing after the month of June of any year.

Irrigation, applied to the growth of orchard trees, is of varied utility. Upon almost all soils on which orchard growing has been attempted in California, if a proper system of planting had been adopted, irrigation might have been dispensed with after the first year; but many who have set new orchards, have learned that to secure a certain and vigorous growth the first year, one or two waterings are required, or some

of the trees will suffer from a lack of moisture, and others die. The application of water, if only by the pailful, to each tree, once or twice during the dry season, call it what you may, it is irrigation, and it is that which, in many instances, saves the tree. It is evident, therefore, that, though irrigation may be dispensed with upon some orchard lands, after the first or second year, it is highly desirable the first year; and if it could be secured at any reasonable cost, but few planters would allow their newly set orchard trees to dwindle and die for the want of moisture that irrigation would supply; and as the same reasoning will apply to the early growth of the vine, we claim that a judicious irrigation of orchard and vineyard grounds cannot be deemed undesirable. To practice a constant flooding of orchard grounds, because the water for the purpose can be easily obtained, is not what intelligent culturists understand by judicious irrigation, any more than a constant stream of water running through a man would be called judicious drinking.

To say just how much water would be required, and the time of its application, in order to secure the fullest benefit from irrigation, must depend upon a variety of circumstances, as the season, the situation, and condition of the soil, its power to retain the moisture it may contain or receive from any source, the nature of its subsoil, and the quantity of the water. It is impossible to lay down any general rule or practice applicable alike to all soils; but this is no reason why we should discard irrigation altogether. Nothing is more certain than that irrigation is destined to render fertile and productive large areas of California lands, clothing them in green verdure, throughout the entire summer, where now only the dried herbage is seen for months. It enlarges the growth of fruits, vegetables and trees; it doubles the annual product of hay, grasses and clovers, and extends the season of green food for milch cows and other animals through the entire of summer, and it is a practice that has met the approval of scientific soil culturists, in all ages and in all countries.

CHEAP ROOFS.—A very simple and effective roofing for barns and other out houses, is made in the following manner: First cover any description of light rafters with well-seasoned, three-fourths or inch thick boards; then cover with sheathing paper, giving sufficient lap—about two inches—and fasten with small, flat-headed nails, and give this a coating of asphaltum and fine sand mixed, and laid on hot. If asphaltum is not easily procurable, a good substitute is made by mixing eight gallons of tar with four pounds of rosin; boil and spread on while hot, and sprinkle with dry sand—all it will take—before cooling. A roof constructed of such materials can be made almost flat—a run of one inch to the foot being amply sufficient. With asphaltum, procurable in any quantity in San Francisco, a durable and cheap roof is obtained.

DWARF APPLES.

THE editor of *Hovey's Magazine*, in the May number, calls attention to the utility and beauty of dwarf apples. A visit to the nurseries of Ellwanger & Barry gave him an opportunity of seeing a miniature orchard some years ago, and he tried the dwarf himself. He says:

"We have, for various reasons, planted them on the borders of the avenues, between dwarf pears, planting the latter further apart to admit of a dwarf apple between each. Here, forming small bushes, or pyramids, not more than two feet high, they are loaded with their splendid crimson-hued fruits, forming a pleasing contrast with the golden pears, and gratifying the eye with the continuity of rich foliage.

"Why dwarf apples have not received more attention it is difficult to say; unless it is that attention has not been drawn to their growth, or from the fact that fine fruit is purchased so cheaply that it is no object to raise it; or perhaps because, to use the cant phrase, 'it will not pay.' For we hear it on all sides that the apple is too cumbrous a tree for small gardens, however desirable the fruit; and it must, therefore, be rejected. This is so; and those having but little space prefer to give it to the pear—a fruit not so readily purchased, and only at a very dear rate. If it was only generally known that dwarf apples were as easily cultivated as dwarf pears, were as readily produced, were quite as ornamental objects, and almost as valuable where the early kinds are selected, no garden, large or small, would be without them. Early apples of fine quality are never very plentiful in the market; they come even before many of the good pears, and are quite as desirable as any other fruit.

"The French cultivate the apple almost exclusively as dwarfs, in gardens of greater or less extent. Trained in fanciful shapes, as pyramids, goblets, or espaliers, they border the main walks, or form quarters by themselves, where they not only produce an abundance of fruit, but form highly ornamental objects. What more beautiful sight than the apple tree when in full bloom? what more tempting to the eye, and what more grateful to the appetite than its beautiful fruit?

"Dwarf apples, then, let us say, are of the easiest culture. The Paradise stock, on which they are worked, will thrive in any ordinary garden soil, properly enriched, for, from the prolific character of the trees, they need the latter. The preparation for planting should be the same as for the pear, viz: trenching two or three feet deep. In setting out the trees, care should be taken that the stock is not covered too deep, otherwise they might root from the graft, and have such a vigor infused into them that they would soon become large trees. Mr. Wm. Reid, of Elizabethtown, N. J., who grows a pretty collection of the best varieties in this way, informed us that he erred in doing this to such an extent, that the whole of his trees had to be taken up and re-set. Plant just even with the surface of the ground. The pruning is very simple, except where the object is very symmetrical or fancy-shaped trees. Grown as bushes, all that is necessary is to keep the head open; pinch off the summer shoots, and head in the slender ones at the winter pruning; and if only the moderate

growing sorts are chosen, they will not occupy more space than a good sized currant bush, and produce two or three dozens of apples each.

"Mr. Rivers says that the trees 'must be chosen with stems not exceeding one and a half feet.' In September he generally looks over the trees, takes off superfluous wood, and shortens the long shoots; this strengthens the blossom buds, which are formed abundantly upon the young wood; of course, in doing this, an eye must be had to the formation of the tree, which ought to be gradually brought into a handsome round bush. For the first five years a row of strawberries may be grown between each row of apples, or any other dwarf, light crop; but strawberries are the most in keeping—a word which, in every gardening operation, ought never to be lost sight of. The trees are six feet apart each way, adopting the quincunx order. Such is the advice of Mr. Rivers, who has had good experience, and upon whose judgment all may rely."

THE GREAT AGRICULTURAL EXHIBITION OF FRANCE.

THE editor of the *Canadian Agriculturist* was in Paris during the great National Agricultural Exhibition of the present year, and thus writes relative to the cattle department:

In regard to completeness of arrangements, cleanliness, beauty and appearance, and other such adjuncts, this show vastly exceeds anything that I have ever seen, or even imagined. The space occupied comprises several acres of the most beautifully ornamented ground attached to those of the Tuilleries, which constitute such an attractive and lovely feature of this really splendid city. In the Palace of Industry, a noble permanent structure, in which the former World's Exhibition was held, the cattle are most conveniently arranged according to their respective breeds, and the center of the building consists of green sod, ornamental water fountains, and a rustic bridge, with shrubs and collections of the choicest and most carefully cultivated flowers. Straw mats even are put for the cattle and horses to repose on, and the most sedulous attention is paid to cleanliness. The capacious galleries above are devoted to the reception of grains and the numerous productions of the soil, with the lighter and more highly finished tools and machines. Out of the palace are two immense ranges of stalls for horses, with excellent arrangements for sheep, pigs and poultry, and the larger kinds of agricultural implements and machinery, so truly characteristic of an advancing husbandry. In short, nothing has been spared in the way of expense and artistic design and finish to make this great exposition of a nation's industry as attractive to the eye as it is instructive to the mind. The French are unquestionably *au fait* in matters of this kind.

According to the Catalogue—a huge volume of some seven hundred pages, for which I paid only a franc—there are nearly one thousand, five hundred entries of cattle. Of these, one hundred and sixty-eight consist of pure Durhams; one hundred and forty-six crosses by a short-horn bull; thirty other crosses by Ayrshire and

others; fifty pure Ayrshires; and only ten of Herefords, Devons, etc. Now, although no English stock formed a part of the exhibition, yet it was obvious enough to the most superficial observer, that the class above enumerated were derived from British blood. The pure French breeds consist of eight hundred and seventy entries, in which the Norman and Bretonne greatly predominate. There are specimens of near twenty other native races, with which, having no practical acquaintance, I can offer no decided opinions. In each class there are many excellent animals, well suited no doubt to the varied soils, climate and markets of this great country. The pure British breeds being now fairly introduced are certainly destined to make progress; and there are many admirable specimens of the advantage of a cross between these, more particularly the Durhams and the native French cows. The Norman race are fine and large, resembling, in some respects, the short-horn, with which they form an admirable cross. It is probable that several of the French breeds would succeed in Canada, and make profitable animals; but experiments of this kind it would not be advisable to try on a large scale, while we can have unlimited recourse to the improved breeds of the British Islands. The Charolaise and Nivernaise cattle are compact and symmetrical, and evidently have good feeding properties, and the flesh, I am told, is of excellent quality. The show of Breton cattle is very large, and consists of numbers of beautiful little cows, black and white, much resembling some of the small breeds of Wales. Among the short-horns may be seen a number of what, even in England, would be called good animals, and the same remark applies to Ayrshires. The Dutch breed, consisting of black and white, so admirably adapted to dairy purposes, are well represented. The Swiss breed, mostly of a dun color, appear to possess many good points; some of the bulls are of large size. The Emperor's cattle, from the Imperial farms in the neighborhood of Paris, occupied a distinct place—consisting of some good specimens of short-horns, and also, as far as I can judge, of Bretons, Normans, Swiss, etc.

The number of prizes awarded to horned cattle is four hundred—amounting in the aggregate to upwards of 30,000 dollars. Besides the money, each first prize has appropriated to it a gold medal; the second a silver, and the third a bronze one.

COMMON SALT A REMEDY FOR INSECTS.—Professor Mapes states that common salt, applied to the soil, will do away with every grub, wire-worm, or other lesser insect, so destructive of corn, and other vegetables.

He applies it as a top-dressing, in the proportion of about six bushels to the acre. He says: "I apply that quantity every year to every acre of my land; and since adopting this practice, I have never lost a plant by grubs. My neighbors, who are afraid to try salt, continue to lose theirs, and are compelled to buy my cabbage and other plants to re-set their beds."

Its value as a *fertilizer* is also worthy of consideration. It is composed of chlorine and soda, and these ingredients are defective in many soils.

THE STIMULUS OF THE PATENT LAWS.

UNDER the naked rafters, in the upper story of a house in Pine street in this city, (New York) is the room of a man who is a very fair specimen of an American Inventor. His beard is long, his hair is uncut, his person is neglected; but his mind is as clear as crystal. He has that active and positive knowledge of the properties of matter, which is gained by those who come in actual contact with them, either in original investigations of physical science, or in personal practice of the mechanic arts. The man of whom we speak, has been engaged for some years in efforts to improve the process of telegraphing, and neither Faraday, nor Henry, nor any other man in the world has a more thorough knowledge of electricity and electro-magnetism than he has. He first devised a plan for the more rapid transmission and recording of the signals which constitute the Morse alphabet at present in use, by which he was enabled to transmit 15,000 words in one hour, instead of 2,000, the highest number previously reached. On removing the apparatus from his own room, however, and applying it to the line between New York and Washington, he found that the rapidity of the operation was limited by the action of the relay magnets. Accordingly laying aside all other matters, he has devoted several months to improvements in this simple little apparatus. We have never been more impressed with the importance of slight modifications in mechanism than in examining the relay magnet which is the result of these months of study and contrivance. The one previously in use seemed to be as nearly perfect as possible, and so very simple that there was no room for improvement in its construction; but there was a trifling amount of friction in the journals of the rocking bar, and even the almost instantaneous action of a spiral spring, was not sufficiently sudden to make the several letters of 15,000 words in an hour. By an accidental discovery of an important property of springs, which we shall fully describe at another time, by modifications of the helix and better arrangements of the several parts, the action of the relay magnet was so accelerated as to bring it up to the rapidity required, and our inventor had the intense satisfaction—which none but an inventor can appreciate—of witnessing the complete success of his long series of labors and experiments.

He is but one of a large number of persons in the country, whose minds and hands are busy under the stimulus of the patent laws, in eager efforts to effect improvements in the arts which will facilitate the operations of industry, and increase the annual production of wealth. These men neither expect nor ask any reward for their efforts, unless they really produce something of money-value to the community, and even then, all they ask is what they themselves can make out of the exclusive use, for a few years, of their own ideas. After these few years have expired, the community comes into free possession of the fruits of their studies and labors. Supposing the same number of men were employed by an arbitrary government on salaries, how feeble would be their labors compared with the efforts that are called forth by the splendid prizes occasionally realized by successful inventors! No kingly cunning could devise a scheme which would secure, at so cheap a rate, so large an amount of

service to the state as this republican law, which was conceived in a spirit of simple justice, as affording a fair, but moderate compensation to those citizens who do the most to advance the prosperity, wealth and power of the country.—*Sci. American.*

The person alluded to in the foregoing is Dr. L. Bradley, for several years a resident of Diamond Springs, El Dorado county, and more recently of Folsom. In our earlier California days, he was our good and true friend and coadjutor; we are glad, therefore, to be enabled to chronicle his great success. The Scientific American, in speaking further of Dr. Bradley's improvements in telegraphing, says:

On page 274 of volume one, (new series) Scientific American, we noticed an improvement in telegraphing, invented by Dr. L. Bradley, now of this city, by which from 10,000 to 15,000 words per hour could be transmitted, in place of 1,500 or 2,000, which had been the previous limit. On applying this apparatus to long circuits, however, Dr. B. found a limit to the rapidity in the action of the relay magnet, and he has since been engaged in improving this part of telegraphic apparatus. He has now a relay which will enable him to transmit 10,000 words per hour. He has also connected this relay with an improved sounding apparatus which enables him to dispense with the local circuits for those who read by sounds. A full illustration of this great invention will appear in our next issue.

The New York Tribune also adds its testimony to the foregoing as follows: Mr. L. Bradley, of Pine street, has just patented what appears to be a decided improvement in telegraphing by sound, by which he claims that the local batteries at the sub stations, used in the Morse system are entirely dispensed with, the main batteries furnishing all the needful power. But one helix is used, instead of two, as heretofore, the soft iron of which is so peculiarly formed as to present a much greater magnetized surface to the armature, producing a more efficient magnet, with only one-third to one-half of the usual helical wire, and thus largely diminishing the resistance to the electric circuit. The armature being hung at its center by a delicate spring, and divested of all luggage of other metal, and the friction of a rocking shaft on pivots, moves with the most perfect freedom, and responds to the minutest current, with great rapidity, and the contacts being made nearer the center of oscillation, are firmer and more effective. The helix being arranged in sections, with a switch, is adapted to long or short, strong or weak circuits. The sounds produced by the main batteries are, of course, very weak, and almost inaudible; but by a simple combination of sounding-board and overstrung wires, this indistinct tick is expanded to a clear, sharp, and perfectly intelligible knock, which the operator can follow with perfect ease and certainty. Each knock is loud and abrupt, and there is not the slightest liability of running them together, however rapid the manipulations of the operator. By this improvement, it is estimated that three-fourths of the cost, in acids and metal, of operating a telegraph, will be saved, while the simple mechanism by which it is accomplished, will be much less expensive than that now in use.

GRAPE CULTURE.

BY A. MARSHALL, ESQ., WEST CHESTER, PA.

HAVING been familiar with various attempts at vineyard or field culture of the grape in this county, (Chester) running back some thirty or thirty-five years, and noted the various degrees of comparative success and failures with their probable causes, my experience and observation may be useful to those who are about to embark in the business without such experimental knowledge. I would premise here, that I write mainly for the uninitiated, and not for the expert, to whom I would listen with much pleasure to any instruction he might be pleased to communicate.

Within the period of time above enumerated, I have known at least six attempts at vineyard culture, embracing several acres each, and all have reached that page of the volume signed "FINIS." Some have been located on hillsides of different aspects, and others on the summits of hills, or levels of less elevation. It is true that most of these experiments were made at a time when much less was known about the culture of grapes than now. But there was one feature so strongly marked in all those failures as to be worthy of particular notice. It was this: If there was a dry spell of weather during the month of August, the vines would cast their leaves, and, as a matter of course, the fruit would not ripen. I have seen large quantities of fruit hanging on the vine about the first of September, sunburnt, unripe, and too bitter for any animal to eat. This occurred so often that the conclusion was soon reached, "It won't pay."

With due submission to the opinion of those who may know better, I have long since come to the conculsion that the dryness of our atmosphere was the main agent in producing this result. I feel fortified in this position by the fact, that near large rivers and lakes this is not so apt to occur; and by another fact, that in the neighborhood of these field failures, about houses and trees, in door-yards and kitchen gardens, the leaves are not cast, and the fruit matures. This is owing to the attraction of moisture in the atmosphere by, and the shading and protection of these objects.

We have all seen that the wild vine flourishes and fruits best along the margins of woods—that the finest-flavored and best-grown bunches are among the branches with one side open to the sun. Now, let us take a hint from this, and plant trees in our vineyards. An apple tree planted about fifty or sixty feet each way of some good winter variety, would not interfere with the grape culture, nor diminish the quantity of the crop, and the picking of the apples would come after the grapes were gathered, and add to the profits of the operation. An evergreen hedge of *Norway Fir* or *American Arborvitæ* planted around the vineyard, would afford great protection, and also assist in correcting the atmosphere, and rendering it more congenial to the vine.

It is not my intention to say a word on the best mode of preparing the soil and cultivating the grape; that has been well done by abler pens. If the foregoing hints shall prove of any service to those who are not within the charmed circle of a lake or large river, and yet have a desire to cultivate the grape on a large scale, the time spent in communicating them will not have been lost.—*Gardener's Monthly.*

If, during the dry season of August, when the vines cast their leaves from lack of sufficient moisture, the ground had received a thorough irrigation from artificial means, the vines would not have cast their leaves, the fruit would have attained its full size, and probably ripened perfectly. Vineyards upon hill-sides and hill-summits in any country, should, if possible, command the facilities for an abundant irrigation. As regards shelter for vineyards, see how growers disagree; read the following.

BRIGHT'S METHOD OF PRUNING THE GRAPE, BY OLIVER TAYLOR, LOUDON, VA. —Having witnessed the gullibility of the public in matters of new cures for diseases in the human system, and especially the consumption, I feel very much like saying to friend Bright that I cannot exactly get the virtue of his method of pruning the grape so as to make a cure of it.

I have a Concord vine, set out the spring of '59, and now fruiting, and rotting, too, though the ground is perfectly dry, and the Diana and Rebecca by the side of it are not so affected; but a few of the berries have black spots that only affect the skin when attacked, and often by ripening time destroy the berry.

I think we will generally find that the same kind of circumstances that produce the rust in our wheat, will produce rot in the grape; and I think experience will prove that we make a sad mistake in planting grapes in warm, sheltered places. I find the north side of a hill the best, as less likely to rot, and ripen better.

GRAPE MILDEW AND ROT.—Mr. R. Buchanan, of Cincinnati, with reference to the influence of the mode of culture on the mildew and rot in grapes, and Mr. Bright's claim for his method of cultivation, says:

"We have tried deep planting and shallow planting, long pruning and short pruning, the rough cultivation and slight cultivation, and mulching, with many other proposed remedies for mildew and rot, but without effect in seasons subjected to those diseases. Nor have the farmers yet found a remedy for the rust in wheat, which is somewhat analogous.

"What Mr. Bright may have discovered, to entitle him to condemn all other modes of grape culture, and recommend his own, I know not. If he has found a remedy for the mildew and rot, it will be worth millions of dollars to the country; but the one he proposes will not answer in this vicinity, for I tried it twelve years ago. I have been cultivating the grape for thirty-seven years, the last seventeen years in vineyards, and with all my efforts in experimenting, have never found a remedy for either the mildew or rot."

BURNING THE STRAW.

THE burning of the vast straw-piles that annually accumulate around the threshing machines of the farmers of the bay and inland counties, may well excite surprise in the minds of those whose former experience in farming, in other countries than California, taught them to convert every vegetable substance grown upon the farm, not actually needed as food for man or beast, into manure, by the usual process of decomposition in the barn-yard, or by plowing under, in an undecomposed state. A great many words have been wasted in denouncing, wholly, the practice of burning the straw-piles, but, we think, in many instances without a correct knowledge of the facts that govern the farmer in his practice. As a general rule, we admit that it has always been considered as a ruinous policy to take from lands the entire crop of cereals, with their straw, making no return whatever for the exhaustion that must inevitably take place under such a system. But the experience of vast numbers of farmers in California—and that experience annually corroborated by the increase of crop, instead of diminution—upsets all theory, and we are reluctantly compelled to admit to be true, what would otherwise seem incredible.

If all the straw of the farm could be fed out to the stock of the same, contributing to the support of animal life, and the maintenance of the soil's fertility, it would doubtless be considered a faultless system, and one that would be invariably adopted, but for the fact that many grain farms are as yet quite too fertile to produce the best yield of grains; and secondly, there are not animals enough to consume the straw, and if there were, there would not be summer pasturage sufficient for their maintenance during that season. But aside from the apparent advantages that might result from the consumption of the straw by animals, there is one fact further, that may be considered with advantage to the grain grower, upon certain conditions of soil.

It has been demonstrated beyond dispute, that upon the adobe lands, which contribute so large a proportion of the best grain lands of the State, there is a positive benefit from burning the stubble that remains after harvesting, over letting it remain upon the ground, to be plowed under. Now, though this would seem like carrying the burning system to an extreme, it is nevertheless the true policy, upon some soils, by which to derive the largest returns from succeeding crops. The reasons for this extreme system are based upon the fact that to turn under even the stubble of a rank growth of straw, to be immediately followed by another crop, occasions a drying out of the surface-soil to such an extent, by cutting off the capillary attraction between the soil and subsoil, as to greatly injure the succeeding crop. The adobe lands, properly managed, are rich enough without the aid of additional fertilizers. The stubble alone, if plowed in, will not decompose sufficiently in one season to act as a manure; hence it is rather an injury than a benefit, to lie an undecomposed strata between soil and subsoil.

We are not reasoning upon simple conjecture. We have the facts—reliable data—to show that the entire consumption of all the straw and stubble by fire, leaving only the ashes as a fertilizer, has positively been attended with an annual increase of

the grain yield. We instance the management of Carey Peebels, Esq., on his adobe farm, in Santa Clara. Mr. Peebels commenced operations with no previous practical knowledge of farming. We have thought, however, that this may have been a positive benefit to him, for the reason that he had no prejudices—the result of former experience—to overcome. Following, however, to some extent, in the old and beaten track, he commenced with deep plowing, the result of which can be summed up in few words: the land so plowed has never recovered—though years have elapsed—its original fine tilth, nor has it, to this day, proved as productive as his other soils, under a system of shallow, but perfect pulverization.

Upon the old system, he too commenced the plowing in of straw and stubble, as a preparation for wheat; but he found that the practice either injured his crops, or the land was not capable of producing good ones. He had noticed that where the body of stubble plowed in was heaviest, there the crop was the poorest. This induced him to attempt the removal of the stubble by fire, and the result has been, a rapid increase of the annual yield, in the following ratio: first year, thirty bushels to the acre; second year, thirty-six bushels; third and last season, forty-four bushels of wheat to the acre; and this the product of soil plowed only five inches deep, and the entire stubble annually burned, the only fertilizer being the ashes, and the manure from animals fed upon the stubble previous to burning. Now, though this may appear adverse to all rules of agricultural practice, it is nevertheless true that adobe lands may be injured by plowing in too much straw—injured so far as regards the next crop of wheat; that the admixture of straw with the soil, in a thoroughly decomposed state, will work an injury to it, we do not believe, taken in the "long run;" but for the present, our adobe lands are rich enough without any applied fertilizer, beyond the roots of the straw; and it is better—because the land is made more productive—for the present, to burn the entire straw and stubble of rich adobe lands, than to turn it under, with the view of further enriching the soil.

MINING WATERS FOR IRRIGATION.

IT has been a question with many as to the value of our muddy mining waters for the purpose of irrigation. It is claimed by some that only clear water is suitable, and that, consequently, the larger part of the waters that flow down the western slope of the Sierra Nevada, can never be used among the lower foot-hills and valleys of the state for irrigating purposes, because muddy and thick from the washings of innumerable mines. We can all see how fast the lower rivers are filling up with the deposit from the mining waters. A question of great import to the future as well as present of our state's prosperity is, can the turbid waters of our mines, instead of being an injury to the rivers, to the extent they now are, be made subservient to the purposes of agriculture, and thus prove of benefit instead of injury? It has been asserted that to run muddy water upon our soils, and coating them with a deposit which can have little or no fertilizing property in it, must work an injury to the soil;

and upon this bare assertion, many have been deterred from using the muddy mining waters for irrigation. In order to do what we can to counteract what we have always deemed an error, we insert, at considerable length, extracts from an address by Hon. A. B. Dickinson, of Broome county, N. Y., and published in the Country Gentleman, giving his views and experience of the value of muddy waters over those that are clear, for purposes of irrigation. Our apology for giving his views at such length as we do, must be found in the importance of the subject to the future of our state's agriculture.

There is scarcely a farm in the county of Broome, that some portion of it cannot be irrigated to great advantage. In the first place, where you have no running streams, prepare a pond, or ponds, that will hold what water you can conveniently collect, where you can bring your surface water, your drainage, and spring water, if you have any, never forgetting that it is not the great amount of water that you need, but the quality. When your ponds are dry, plow all that you can cover with water; then, when filled, take a heavy cultivator—or make it heavy by chaining on a stone—with a yoke of oxen, and a man to ride on it; cultivate until the water becomes as muddy as it can possibly be made; then open your gate, set it running in a furrow to any part of your farm you wish to irrigate; then let off on to the meadow at as many places as you possibly can, and take care of it and spread it evenly, for if too much is let off at any one point it will rot the sod, and prove an injury for that season. You will soon discover that you cannot run the water more than six or eight rods before the grass has picked off the sediment and the water becomes worthless. You may have another furrow below to catch it, and run it where you may use it again by plowing down some knoll that you can run it on to. Do not fear to plow and cultivate it while the water is running, and so keep on as often and as long as you can keep the water on your farm, and have land that you can plow and mud the water. I run some water over and mud it three times; and am prepared to, and shall, next winter or spring, seven or eight times.

WHEN TO IRRIGATE—ITS EFFECTS IN THE PRODUCTION OF GRASS.

Land to irrigate to good advantage should descend two ways—first to carry your water, say to the south, and then to the west, where you let it out of the furrow to run over the meadow. You can then make furrows six or eight rods below, to run on in the same way, and let it off as before. The same furrow which was made to catch the water that had been cleaned by the grass, may be used for the next strip to be irrigated, as it should be made with reference to the purpose, and so on. Every rainy day, or running of snow water, should be devoted to irrigation—from the equinoctial storm in September until May. And the harder it rains, and the faster the snow thaws, the harder yourself, and all the help you have, and teams should work. Therefore, you should provide good "rubber" overcoats and water-tight boots for all who work; the task will not then be very hard nor health impaired. I said *yourself*, for the reason that you need not expect ever to hire a man who knows how to

irrigate; for if he has brains enough to perform that service properly, he has sufficient to do something for himself.

If your farm is so situated that you can make a pond of half an acre, you will find after the water is let off in the spring it will be overgrown by fall, with a species of wild grass, which will form considerable of a sod. If so, plow that up when dry, and burn it into ashes; stir it up and mix it with your clay, and then run that on as before indicated. You will thus soon learn that the more good things you feed your plants with, the better they will feed you in return. And I tell you from long experience, it is a hundred fold cheaper than any other mode that I know, of renovating land. I have run on to ten acres of meadow in one day five hundred cubic yards of clay by measurement—which is equal to five hundred heavy wagon loads—with two teams to plow, and one to cultivate, and two hands to change the water from one furrow to another, and see that it ran on every part of the meadow, which was covered with a heavy coat of sediment, as good as could have been deposited by the overflow of any river, however muddy might have been its waters; and this was done without the aid of reservoirs or ponds. It was a severe rainy day, producing a sufficient supply of water, which came down from the fields and woodlands above. I had prepared open ditches by the sides of my fences and the road, leading to a piece of high ground that I wanted levelled down.

Do not be afraid, gentlemen, of plowing and washing off the soil of one or two acres to enrich a whole farm. For you may wash off the entire surface soil, and plow up the hardest cemented hard-pan in the country, and let the frost have action on it two winters, and then seed it down with a half a bushel of grass seed—as I will tell you hereafter—and run this same kind of sediment on to it for three or four successive years, and you can make it cut four tons of hay to the acre annually. Understand me, I am speaking of what I know; for, some five years since, I had a piece of ground plowed in the fall, which had previously been subsoiled to the depth of fourteen or fifteen inches, including a portion of the subsoil. There came a heavy rain, which tore away my dams, sluices, and waste-weirs, and then tearing across a corner of the field where there was considerable of a descent, washed off nearly every particle of the surface soil from three acres—literally making a canal through the field, which I had to plow and fill up with a scraper. I plowed it, or rather plowed at it, as it was so hard it couldn't be plowed, and sowed it with oats, and did not harvest my seed in the fall. I then plowed it with three yoke of oxen, with a man to stand on the beam, and three horses to a subsoil plow to follow in the same furrow. I sowed it again in the spring with rye, and seeded it, making the surface as even as possible, and have since irrigated it by running on as much clay as I dare without rotting the sod, with ashes burnt from sods and mixed with water, which I believe to be the richest of any, in ammonia—which was snow water—have never put one shovelful of manure on the piece, have taken off every particle of hay that has grown on it, and I have no doubt that I cut from it four tons of hay to the acre this present unfavorable season. I have put the hay away by itself, which I shall weigh, and I will let you know exactly how much it did yield.

A FIELD FOR EXPERIMENTS — EFFECTS OF IRRIGATION ON THE REST OF THE FARM.

I have also a field of ten acres that has been mowed for thirty years, which has never been foddered on, or had a load of manure applied to it, which has been irrigated for that length of time, (though by no means as well for the first twenty as for the last four or five years) and which I believe has yielded forty tons of hay this present season, which I also intend to weigh. This plot of ground is my trial field, where I can test every plant that grows on my farm, with what I call ammonia. A portion of it has never had anything run on it but rain or snow-water. I have plowed it up once in this time, and kept it up three years, to give me an opportunity to raise on some part of it every annual plant that I had ever cultivated. It had been made so rich in ammonia, from twenty years' use, that most of the crops grew so fast that they fell down, having been covered once with the water after being sowed and planted—which was wrong. You must be careful not to keep the water on (except when it freezes) more than eighteen or twenty hours at a time, or you will rot the sod. If you irrigate your meadows late in the fall, winter, and spring, you will have no occasion to water them in hot, dry weather; they will become so rich they can stand the drouth and frost every month in the year. And there is still another advantage. If you can irrigate fifteen acres on a hundred-acre farm, and make it cut four tons to the acre, annually, your sixty tons of hay will, in twenty years, with your straw, make sufficient manure, saved and properly applied, to enrich the other eighty-five acres to such a degree as to make it a perfect garden. If you cannot irrigate fifteen acres, irrigate all you can; and when you once begin, you will never stop; for when you witness its beneficial effects, you will extend the work everywhere you do not have to run your water up hill, and will even do that, with the use of the "Ram," if you cannot accomplish it without. And as you witness its wonderful effects on your grass, from day to day, you will soon learn to distinguish the plants which profit most by the use of ammonia, and which are the greatest feeders on it, with as much certainty as you can tell by feeding a flock of geese, ducks, turkeys, and hens together, which will receive the most benefit from the food spread out before them, or in other words, which will get the greatest share. For instance, if fed all that the whole can eat, they will all grow and fatten; while, on the other hand, if you have a dozen ducks, and the same number of either of the other sort, and shut them up where they can get nothing else, and then feed them what would be sufficient to keep both kinds growing, the ducks would grow fat, and starve the other kind to death. It is no part of my business to undertake to explain why the Creator has made these great distinctions, in giving one species of fowl or plant such seeming advantage over others. It is sufficient for your purpose and mine to know the fact, and act accordingly.

Keep one plot for experiments—on which flow every kind of water within your reach, in strips—spring, river, creek, rain, and snow-water; from which you will soon learn, if you have not already learned, which is best. All water that will bring in or grow foul meadow, or convert the common "cuckle" to a miniature sunflower, or

bring in smart-weed, is good enough; and you will see such in nearly all soft-water countries, except the foul-meadow grass, which is rarely ever produced in old countries, as it generally takes its exit when the plow is used, as the red man does when he sees the quail—as he knows then that the white man is nigh—though, like himself, the quail is not easily tamed.

You will find two of the plants above mentioned, the smart-weed and "cuckle," in lime-water countries, along the edges of furrows, where the soakage of barn-yards runs. The smart-weed will often be found where manure has been liberally applied, in seasons when large quantities of rain fall at once—when Liebig's turnips, wheat, barley, and even oats, would largely abound in leaves.

The kind of water I have been describing, will, in twenty years, if properly applied, without the application of anything else, cause four tons of hay to grow on an acre, annually, on any reasonable kind of grass land, that would not produce, in a state of nature, more than a ton or a ton and a half to the acre. This kind of land may be made to produce equally as much in five or six years, by mixing the water well with clay, such as you have everywhere under your surface soil, and skillfully running it on to the meadow. I think, indeed, I know, it can in less time, by the addition of ashes burnt from the sods on the pond, or along the roadside, and mixed in with the clay. I have found this last mode of treatment to be of almost equal advantage to all other crops that I have tried, not even excepting turnips. You need not fear to mix other things with those I have mentioned; for the food of plants may be compared to the old lady's soup, which she could make good out of stones, if she had enough other ingredients to put with them. You can make plants grow on a rock if you feed them sufficiently. My word for it, you have a sufficiency on every farm in Broome county to feed nearly every plant you grow; at least enough for all you need to grow, to make farming more advantageous than to attempt to force plants to grow, which your soil is not adapted to. And I beg of you not to fool away your money for guano, bone-dust, poudrette, sulphate of lime, or sulphate of ammonia, or the *phates* of anything else, which is quite too *fatal* to your purses for broad-acre farming, however much they may have done for other countries, on exhausted soils. For anything that I grow, plaster and salt are the only things that I can afford to purchase, to renovate my soil and increase my crops.

PUTRIDITY OF WELLS.—Sometimes the water in wells suddenly acquires a putrid taste and smell, as though some animal matter was undergoing decay therein, yet which, upon examination, is found not to be the case. The Homestead tells of such an instance, and a remedy was found in the thorough agitation of the water, by working a chain pump for two hours, bringing the water more or less in contact with the air. The next day the water was as sweet as ever. In a cistern of filtered rain water, the same remedy of agitation was resorted to, with equal success.

NEPAUL BARLEY.

AMONG the many new varieties of grains, grasses, vegetables, and fruits introduced to the notice of Californians during the last five years, very few have met with that general favor that attaches to the cereal known as Nepaul barley. The characteristics of this grain are, its close resemblance, in form, to wheat, its beardless head, and fattening properties, as food for animals. It is six-rowed—produces immensely—and yet the straw has a shorter growth than either wheat or the common barley. As an annual for the production of hay, cut at the proper time, it is also superior to wheat or oats, as it has a broader leaf than either, and more of them on the stalk. The grain is without the rough husk or coat of the common barley, resembling wheat in this particular, and much softer, and less harsh to the mouths of animals; on this account, animals, and hogs in particular, prefer the Nepaul barley even to wheat; and being entirely free from beard, it never inflames or makes sore the lips, as does the beard of the common barley, and several varieties of wheat.

It can be sown at any season of the year, from November to May, and with a certainty of success, as the last three years of trial have clearly shown. It yields equally well upon the mountains as in the valleys; in proof, we instance the yield obtained by Mr. L. G. Burrell, on the very summit of the mountain, near Santa Cruz gap road, on the line between Santa Clara and Santa Cruz counties. Mr. Burrell first sowed half an ounce of seed in May, and the third year's product from the half ounce, was a trifle over fifty bushels—yielding the last year at the rate of ninety bushels to the acre, at sixty pounds to the bushel; using eighty pounds of seed to the acre.

Of its culture and yield in the valleys, Mr. Carey Peebels, upon the adobe lands of Santa Clara, has also produced at the rate of over eighty bushels to the acre. He also prefers it, as food for hogs, to any other grain, and he fattens some of the finest pork in the State. His smoked hams and bacon always command the highest market price. This variety of barley ripens earlier, by two or three weeks—when sown early—than any other, and earlier than wheat. It is frequently found in the milk by the middle of May, at which time the practice of swine growers is, to enclose by portable fence, sections of the field at a time, and turn in. It is the cheapest possible mode, and the most profitable, of turning grain into pork; and it pays better in this way, than harvesting and selling the grain.

Mr. D. E. Hough, of Oakland, has, in his locality, been equally successful in growing at the rate of over ninety bushels of this grain to the acre, and having more seed than land on which to sow it, he has some eight hundred pounds, which he would dispose of, if wanted for seed. From the good success that has everywhere attended the experiments with this grain, we do not hesitate to place it among our most reliable farm products; and would recommend it to the notice of farmers who raise feed for fattening swine, or hay as winter forage.

DRYING FRUIT.

THOUGH we are not of those who believe that the fruit business is to be overdone, so far as even its profitable culture for sale in its fresh state is concerned, for many a year to come, yet for the benefit of those who can see no furture outlet for the fruit to be produced from the rapidly increasing acres of orchard grounds, except a resort to drying, for export, we subjoin a process for kiln-drying fruit at the east, as described by a correspondent of the American Farmer; thinking perhaps it may suggest something of interest, if not of value, to the reader. The fact that the apple-paring machines have been improved upon, adapting them to the paring of peaches, is an item, of itself, worth knowing; as the peach, before any other fruit in California, will be produced in quality and quantity that will tempt our growers to try the drying process.

"I have just returned from Northampton county, Va., where the drying apparatus, of which I informed you not long since, has been put in successful operation. As the subject will be interesting to many of your readers, allow me to give a brief description.

"Imagine a long box –or tunnel, as I call it—twenty-seven feet long, two feet eight inches wide, four feet eight inches high, built of lath and plaster; the object being merely to exclude air. This is fitted with a rail-way and train of cars, all of wood; the cars having uprights, with grooves, to receive light frames, covered with thin muslin—much like a mosquito bar—on which the fruit is placed. Near the entrance is a chimney, sixteen feet high, made of four boards nailed together, and at the other end hot air is introduced, through a peculiarly constructed furnace. This causes a constant current, throughout the length of the tunnel, up the chimney, taking along with it the moisture as it is liberated from the fruit.

"Apples are pared, sliced, and cored at one operation, by an ingenious little machine, made by Whittemore & Bro., of Worcester, Mass.; and recently an improvement has been made, adapting it also to peaches, which was thought to be impracticable.

"Apples were dried thoroughly, of a beautiful golden yellow, in twenty hours—peaches require a little more. The operation goes on without regard to weather; requiring only two women to attend the cars, and six children at the machines, with the expense of a bushel of coal per day.

"The fruit thus dried must be free of worms the coming spring, as the fly has no opportunity of depositing the egg, and the heat of one hundred and thirty-five degrees would destroy any insect that might then exist.

"Another important article is green corn. The whole ears are first subjected to the heat for about five hours, to coagulate the milk, when the grain is cut off rapidly, by a machine for the purpose, and spread on the frames. In fifteen hours more it comes out perfectly dry. When boiled, it has all its original freshness and flavor, and cannot be distinguished from that just from the garden. A pint of the dried corn makes a dish of the usual size, which, at twenty-five cents a dish, would give

six dollars a bushel for corn! That put in cans, is sold by the grocers at fifty cents, and does not compare with it in quality. It could well be afforded at half the price mentioned, when, like potatoes, it would become food for the million, and a standing dish on every table.

"In this manner all kinds of fruit and vegetables may be preserved, and put up in a much better condition, especially for shipment, than the usual method, in cans.

"*Lumber* may also be seasoned in a short time, and free of risk, as not a spark of fire ever comes near it. I put in a piece quite green, for it was growing in the woods two weeks previous. It measured twenty-five inches long, four inches wide, and an inch thick, and weighed thirty-one ounces. The next day it had lost five ounces, and the day after but one ounce; it was then examined by two carpenters, who pronounced it thoroughly seasoned. What a valuable appendage this would be to a saw mill. The invention is covered by my patent for the brick drying tunnel.

"Along with this, I hand you samples of the apples and peaches, and also the piece of wood above mentioned."

HOUSEKEEPING AT A PREMIUM.

AT the anniversary commencement of the Mount St. Vincent's Academy, New York, Archbishop Hughes delivered an address to the young ladies, in which he made some very sensible remarks and suggestions, which it would be a great blessing if they were put in practice at some of the academies which assume to give the young ladies an education in this state. After distributing the premiums he said:

"Now, my children, it is necessary that you should have a good education, and that, also, you should have those accomplishments which beautify and adorn life. Next year, however, I mean to introduce here—and I wish I had propounded it before in all the schools under my care—a new science. Do you know what it is? Well, there is no word in this weak English language which exactly expresses it. (The Archbishop here repeated some Irish phrases, which provoked great laughter.) I mean the *science of keeping the house.* Every young lady ought to understand this science, whether she practices it or not. If she is obliged, by circumstances, to use this knowledge, what an invaluable blessing it is to her! If not, she may have a servant whom she calls cook; but even cooks need a little overseeing. And then, what if some one should come in for 'pot luck' during the cook's absence? or what if the cook should dismiss her? I shall arrange then, with the sisters, and I hope to see the idea adopted throughout my diocese, that *every young lady over the age of thirteen years, shall have the privilege, if she desires it, during the next year, of spending three or four days, say every month, in the kitchen.* We shall have, then, theory, science, and a little practice combined, and, not to be wearisome, for I see that our friends are anxious for the 'Grand March,' I shall have next year, a gold medal, worth fifty dollars, for that young lady who shall write the best dissertation, not to exceed five pages of foolscap, upon that new science which I have introduced."

Observations on the Sympathy and Antipathy amongst Plants.

SYMPATHY.

The vine likes the nearness of cherry trees and elms.

A white vine, planted immediately beside a blue, gets *blue* grapes.

Chestnut trees amongst mulberry trees get twice as large fruit.

Lemon, orange, myrtle, cypress and laurel trees grow and succeed best among one another.

The aspargus increases much better near the *hedoema pulegioides*, which gives the "penny-royal."

Will you reinforce the smell of the roses? plant some *garlic* or *onion* among them.

If you plant some roses and white lilies together in one bed, both get much more sweet scent.

If you have a valuable flower, which commences to fade by any accident, put next to it a *chamomile*, with its roots in the same pot, and you will see revive the fading flower from day to day.

Will you you produce extraordinarily big turnips, beet roots, carrots or red beets? excavate a few of these, put the seed into the hole, and after a few days sow it.

Will you attain a considerable fertility of the vine? strew some powdered *tartar*, mixed with a little ox-blood, among their roots, and you attain an incredible success.

ANTIPATHY.

The walnut tree is hostile and noxious to every other fruit tree in its next neighborhood.

Enemies against one another are: the olive and the oak tree, the vine and the laurel tree.

Cucumbers, planted among olive trees, perish.

An oak tree beside a walnut tree, dries up.

Colocynths are noxious to every herb or flower in the same bottom.

Hemlock, beside a vine, dries up.

Rose and orange water loses its sweet scent during the time of blowing of those plants.

The wine becomes unquiet and ferments in the casks while the vine blooms.

Dr. Richter-Sandor, Veterinarian.

The editor does not give the above as having his own assent, but as curiosities which may afford cultivators matters of interesting and amusing experiment.—*American Farmer.*

BEE PASTURAGE.

Editor Culturist:—Having noticed in your October number an article under the head of "Honey from the Tules," I must beg leave to differ from you in some of your conclusions. While I am willing to admit the correctness of statements in regard to the value of "tule lands" as pasturage for bees, I cannot concede the point, first, that the country is overstocked, or in any danger of it for a considerable time to come; second, that frequent rains are necessary to the production of honey; and third, that it is necessary to confine bees to the banks of rivers, or the margin of the tules, to secure to them adequate supplies of food during the dry season.

In support of my first position it is proper to remark, that the *mania* for increasing bees has raged to such an extent the past two years, that the honey resources of a country would have to be exhaustless, and even fabulous, to sustain it. So long as bee keepers persist in dividing up their colonies to the last extremity, just so long must they expect to furnish artificial sweets, except in the most favorable seasons of the year, and this rule will apply to the tule region as well as any other part of the country. I have taken the position that this country is not likely to be overstocked with bees, provided that they are managed upon a rational system of increase. To suppose that a colony of bees that has been multiplied to its utmost capacity in the early part of the year, requiring all its resources to nourish its brood and build comb, when pasturage is abundant, can sustain itself in a flourishing condition when bee forage becomes scarce, is *simply absurd.* Any animal, to *take on fat,* must be full fed, and exempted from extreme physical exertion. Now as *wax* is the *fat of bees,* and requires the same conditions to produce it in the insect as in the animal kingdom, we can at once recognize the conditions that must surround a colony in order to secure the rapid production of comb—and there can be no substantial increase of colonies without a corresponding increase of combs. The wax-producing bees must be allowed to remain in the hive and have their food brought to them by the out-door laborers; so also must the nursing bees remain in the hive, take food into their stomachs, and when partially digested, distribute it in exact proportion among the young brood, so that each larva has just enough to develop itself into a perfect bee and no more. Now it is easy to perceive that when forage becomes scarce, colonies that are in the condition just described, must either draw upon present stores—which every bee keeper knows cannot possibly exist where the whole energy of a colony has been directed to comb-building and the rearing of young bees—or be supplied with artificial food, in order to sustain itself in a flourishing condition. Then the same avarice that prompts the bee keeper to multiply his colonies to such an unnatural extent, will keep him from feeding them; hence, the cry that the *country is overstocked.* Now suppose that bees should be increased to an extent not exceeding their capacity to fill the hive with comb and a reasonable supply of stores before the scarcity of honey commences; then they will always be able to gather, even in the poorest part of the season, enough to supply their immediate wants; and as soon

as honey becomes plenty, they are ready to devote their whole energy to the laying up of stores for their owner.

My second position is, that rain during what we call our dry season, would be as fatal to the production of honey as destructive to hay and grain. The honey dews which fall in many places upon the grass are entirely independent of rain, as also the exudations of the oak and other trees are dependent upon a dry climate for their very existence. California, if I am a true prophet, will soon stand as the first state in the Union for the production of honey. For where, but in California, does the atmosphere distill honey, leaving the bees with four months of uninterrupted sunshine with nothing to do but carry it into their hives. I know of bee districts that will, according to my judgment, support one thousand (*strong*—not weak) colonies to the square mile, during the dry season, and not a *tule* within twenty miles. But I have already exceeded what I first intended to say, without noticing my third proposition. I think, however, that you will be satisfied with regard to it, upon a little reflection; but if you are not, I will make it a subject of another letter.

Very respectfully yours,

STOCKTON, Sept. 8th, 1860. J. M. NORTH.

NATURAL LIFE OF THE HONEY BEE.—The majority of persons who have the care of bees, entertain the idea that the worker bees live many years. Their conclusion is drawn from the fact, that colonies sometimes inhabit the same domicil a long period, (fifteen or twenty years) never thinking that as fast as the bees die off naturally and from other causes, they are continually replaced by a new progeny. The natural life of the honey bee worker does not exceed six months, and from recent experiments, I believe does not exceed, in the summer season, three months.

By the aid of the Italian or Ligurian bee, this may be easily and satisfactorily tested. On the second of July last, I gave to a very powerful stock of native bees a pure Italian queen. To-day, Sept. 15, this stock was examined to ascertain what proportion of the bees were of the Italian race. The stock is in a Langstroth hive. Taking out the frames one by one, both sides of each comb were carefully inspected, and so far as I could ascertain, at least nine-tenths of the bees were purely Italian.

Also on the seventeenth of July, I gave an Italian queen to another stock of native bees. This stock was also examined to-day in the presence of a friend, who assisted me in the examination. Examining the combs as before, we did not find in this stock *a single native bee!*

This change has taken place, as will be observed, in less than two months. Since the seventeenth of July, I have taken out of this colony combs of maturing Italian brood—giving them to other stocks—more than enough to make a good colony of bees. Thus it will be seen that the natural life of the honey bee in either of these instances would scarcely exceed three months; also, that it requires only a few months to change an apiary of native bees to those of the Italian race.—*Country Gentleman.*

GOODYEAR, THE INDIA RUBBER MAN.

ALL our young readers must have heard of Charles Goodyear, the manufacturer of India rubber goods, and the man who discovered the way to make what was once almost a useless gum, a very valuable article of commerce. Mr. Goodyear died in New York in July last, and the Scientific American gives a brief account of the struggles, and trials, and poverty of this great inventor, as well as of his success, wealth and honors. The study of such a character must be beneficial to the young, and we copy a paragraph or two.

"It was in 1834 that Mr. Goodyear turned his attention to the manufacture of India rubber. There was a mystery about this tropical gum which gave it a strange charm to his imagination. It was not an article of commerce, but appeared, from time to time, only as a rare curiosity brought from foreign lands. The savages who possessed it kept the mode of its manufacture a profound secret. It was found only under the burning sun of the equator, in the gloomy swamps of the unexplored Amazon, or the jungles of Asia and Africa. Its nature was as mysterious as its origin, and the chemists who examined it were baffled in their attempts to make it of practical use. Ingenious men, abroad and at home, had attempted to solve the mystery, but all had failed. That it was of immense value in the arts, to supply a thousand wants of civilized life, was obvious to all, but the elastic gum kept its own mysterious secret, and there was no clue to the discovery.

To discover the secret and solve the problem became the dream of Charles Goodyear's life. The difficulties and failures which he encountered only made it more dear to him. He asked aid from men of science, but they discarded him; his associates abandoned the pursuit in despair; his friends one after another left him, but he only clung the closer to his cherished faith. In one of the contests by which pirates of his invention sought to rob him of his rights, the veil was half withdrawn from the life of the inventor, and a few details of the privations which he endured were given. He was in such extreme penury that his bed was sold from under him; he was so poor that it was said he could not buy an ounce of tea on credit. In the dead of winter there was no food in his house and no fuel for fire. This was not the struggle of a few months only, but it was the story of years; for it was not till 1844, after ten years of toil, that he perfected and patented his discovery. His labor, however, did not cease, and even to the hour of his death he was devoted to the favorite pursuit upon which he lavished the immense sums which he received from his parents. His life was subject to the strangest vicissitudes. He went from a poor debtor's prison to a palace in Paris. The man who was an object of cold contempt in an obscure village, on account of his poverty, received the Grand Cross of the Legion of Honor from the Emperor Napoleon, as a reward for his genius. In Europe as well as America his name was honored and his merits appreciated; but to the hour of his death he was the same enthusiastic and patient inventor."

CULTURE OF FRUIT TREES.

THE following, from the address of Hon. M. P. Wilder, President of the American Pomological Society, at the session lately held at Philadelphia, comprises much valuable information in relation to the culture of fruit trees.

1. The healthful development of fruit trees, as of other living substances, depends on the regular reception of a certain quantity of appropriate food. This food, whether derived from the earth, air, water, or other natural elements, is conveyed though the medium of the atmosphere and the soil. While we have only an indirect and imperfect control of the atmosphere and other meteorological agents, the great arbiter of nature has committed the soil directly to our care and treatment.

2. To this I may add the general sentiment in favor of thorough and perfect drainage, beneficial to all cultivators, but indispensable to the fruit grower.

3. Not less uniform is the experience of the salutary effects of a proper preparation of the soil for fruit trees, both in the nursery and in the orchard.

These principles are settled in the minds of all intelligent fruit-growers; but they need to be often promulgated and enforced. It should be equally well understood that success depends upon the adaptation of the habits of the tree to the constituents of the soil, the location, and aspect or exposure. A disregard of this principle, and the fickleness of seasons, are among the most common causes of failure, not only among inexperienced cultivators, but among professed pomologists.

More attention should be given not only to the location, but especially to the aspect of trees. A common error is to disregard the time of ripening. We plant our early fruits in the warmest and most genial locations. These should be assigned to our latest varieties. For instance, we, at the north, have too often placed our late fall and winter pears, like Easter Beurre, or Beurre d'Aremberg, in northern aspects and exposed positions, where they are liable to injury by the gales and frosts of autumn, whereas we should have given them a southern aspect, and our most fertile soils, to bring them to perfection. The most favorable locations are not so indispensable to our summer fruits, which mature early under the more direct rays of the sun, and in a much higher temperature. This rule may require modification and even reversion to adapt it to the south, or south-west portion of our country. And here I cannot refrain from expressing the earnest hope that our local catalogues may be framed with a wise reference to this principle, and that the day may not be distant when the society's catalogue shall designate the particular locality, aspect and soil, adapted to each variety of fruit.

But however important these considerations may be, the subsequent cultivation of trees must receive a passing notice, even at the risk of repeating some opinions of myself and others, which are already before the public.

The sentiments contained in the communication of Mr. J. J. Thomas, at our last session, against the growth of any other crop in orchards, especially against relying upon small circles dug around trees in grass ground, as a method of culture, deserve to be held in perpetual remembrance. Equally injurious, in my opinion, is the habit

of deep digging or plowing among fruit trees, thereby cutting off the roots and destroying the fibrous feeders, which frequently extend beyond the sweep of the branches. However necessary the practice may be of cutting off roots in old orchards, in the process of renovation, it should be carefully avoided in grounds properly prepared, and where the trees are in a healthy or bearing condition. From experiment and observation, I am persuaded that working the soil among fruit trees, to the depth of more than three or four inches, should be carefully avoided. The surface should only be worked with a hoe, or scarifier, for the purpose of stirring the the soil and keeping out the weeds. Thus we avail ourselves of the advantages of what, in farming, is called flat culture—at present so popular. For the same reason, manure should not be dug into any considerable depth, and some of our wisest cultivators now recommend its application on the surface. So favorably impressed with this practice is the Massachusetts board of agriculture, that it has ordered a series of experiments with cereal grains and other products in the application of manures on the surface as compared with specified depths beneath it. The practice of surface manuring is no novelty of our day. An eminent cultivator of fruits, nearly two hundred years ago, said: "Manures should be applied to fruit trees in the autumn upon the surface, that the rains, snow and frosts may convey the elements of fertility to the roots; and that, by this method, one load may do more good than two used in the common way of trenching to the depth of one foot." Other distinguished cultivators and scientific gentlemen recommend the same practice. Hence, we are of the opinion that our orchards and gardens should be manured in the autumn, and on the surface, so that the manure may be thoroughly decomposed, made soluble during the fall and winter, and suitable for the nourishment of the tree early in the spring.

FRENCH PRUNES.

OUR almost unclouded summer skies would seem to invite the horticulturist and pomologist to cultivate such fruits as, in a dried state, would find the world a broad market, rather than devote so great a space as they do to the culture of the more quickly perishable fruits, as the peach, apricot, and many varieties of the plum. An inquiry from one of our patrons is before us, asking information in regard to the variety of the plum proper for making prunes; whether it can be obtained of the nursery men of California; and whether the drying process is difficult of practice. Most opportunely, we find in the Country Gentleman of October 4th, an article on this subject, which is reliable. Before the season for drying prunes shall again arrive, we shall give a description of the process most approved.

"From July 1st, 1854, to June 30th, 1856, there were imported into this country over one and half millions of pounds of dried prunes, amounting, at the custom house appraisal, to over one hundred and eleven thousand dollars. In the winter of 1854-5 large quantities of scions of two varieties of prunes were imported from France, and

the scions were widely distributed, principally in the States north of Pennsylvania, and certain districts bordering on the range of the Alleghany mountains, in order to be engrafted on the common plum. These regions were made choice of in consequence of their being free from the ravages of the curculio, which is so destructive to the plum tree in other parts, as often to cut off the entire crop. It has been estimated that the State of Maine alone, where this insect is rarely seen, is capable of raising dried prunes sufficient to supply the wants of the whole Union.

"The scions referred to were the Prune d'Agen and the St. Catherine. The d'Agen is considered the best for drying, is of good size, of violet color, with deep yellow flesh of a delicious flavor. This variety succeeds best when grafted upon a wild stock, or when it springs up directly from the root. The St. Catherine prune, in the climate of Paris, is also esteemed excellent for drying, &c. For a description of it, see Patent Office Report, 1854, page 30, as also for the method of drying prunes.

"Late in the spring of 1855 I received a cannister of prune scions; when received they were in bad condition; most of them had turned brown and worthless. Having but little faith of their being adapted to this latitude, I had but few scions set, and contributed the balance to some of my neighbors. The result of the matter is, those set on the Canada plum have done first rate—grow freely, stand the winter as well as our forest trees, will blossom the next year after the scions are set—but the fruit has been mostly destroyed till this season. From some cause the curculio here has been among the missing this year, and the consequence is, plums are plenty, and the prune d'Agen is among our best bearers—and best plums, that is, if I am any judge in this matter; but not wishing to rely solely upon that of my own and others' opinion here, I forward to you, Messrs. Editors, a sample of them, knowing you to be experts in these matters of taste. After testing them, please inform your readers how they compare with the dozen varieties of plums presented to you by Messrs. C. Reagles & Son, a few days since. Some persons say Wilson's strawberry is too acid. I have no doubt others would say the prunes I send you are too sweet; and in fact, they are a trifle sweeter than virgin honey or refined loaf sugar, but it is not a sickish sweet, but a sprightly one. From the great quantity of sugar they contain, I apprehend there is little difficulty in drying them—at any rate, I shall try it, as they do not, like most other plums, manifest any disposition to rot.

"I do not know but this variety of plum has been cultivated in your State ever since the early settlement of it, as the editor of the Boston Cultivator says: "In some parts of New York plums (which are the same as prunes) are grown in large quantities for drying. * * We have frequently seen good specimens of French prunes grown in the State of New York, and know of no obstacle to their cultivation except the curculio and the plum wart." I suppose he means by this the black wart or fungus that appears on the limbs of plum trees; but as yet there has been no appearance of black wart on the prune, nor no curculio this year, and with care, their attacks can be warded off in years when they are plenty."

CHIT CHAT.—No. 3.

"WHAT have you there, Susy, which you are carrying so carefully, this fine morning?"

"Oh, a little present for yourself and uncle John; that is, if you think it is acceptable."

"Surely, dear child. Anything you would offer must be worthy of our acceptance." And aunt Betsey, smiling kindly, opened the neat little basket, and disclosed a small cheese, resting on a snowy napkin. "Why, Susy, where did you get this?"

"I made it," said Susy, much amused at the puzzled look upon Aunt Betsey's face. "I have been trying an experiment, and this is part of the result; and as you were so kind in showing me how to manage my butter, I thought you would be pleased to find me trying my hand at anything useful, even if it is such a little matter as this."

"Yes, indeed, I am pleased; but still I do not know how you went to work to make this, when I am sure that you have neither hoops or press; so it is your turn to teach me; so tell me all about it. Has your father found out anything new?"

"No, Aunty; I think I may claim credit in the finding out, for it was I that saw the article, read it over, and resolved to try it, though I did not tell my father until I had one ready for the table; and he was pleased and surprised, I assure you, when I told him it was my own manufacture."

"I have no doubt, dear, that he was pleased to see that his daughter shows such a disposition to learn; and that is the true way. If a person makes up their mind to accomplish anything, and to go to work with a good will, they generally succeed; but I see you have your work, so you can sit long enough to tell me how you made the cheese."

"You remember we had a box of little presents from home, this summer. Well, in one corner of the box I found a book called the Farmer's and Emigrant's book. I never used to care much for such books; I liked story books better; but I am trying to be useful—so I looked over the book; partly, I suppose, because it came from home. One day, in turning it over, I saw an article on cheese, and a *new way* to make it without a press. I thought that was just the thing for us, as it spoke of being a good plan for people who could not spare much milk. I did not wish to interfere much with my butter making, but I thought I could a little. As near as I can tell you, the directions were, to soak a piece of dried rennet in tepid water; a bit an inch square to a teacupful of water was enough for two or three gallons of milk. I set aside a large pan of the night's milk; then I added an equal quantity of the warm morning's milk, and strained in the water from the rennet; in forty minutes it was well set; it was then to be cut quite fine with a knife, and the whey poured off to scald the curd with; after scalding the curd, it was to be strained through a cullender, salted, and packed down in an earthenware jar; then to be covered with several thicknesses of cloth—the cloth to be replaced by a dry one as often as it becomes saturated with whey. The recipe added, that a fresh layer could

be packed in as often as you had milk to spare, until the jar was full, when it could be covered closely, and kept for use."

"You did not stop to get your jar full, then," said Aunt Betsey.

"No; I was in too much hurry to see what it would be like, so I only made a little, to try, then I made your's; and after I had taken it out of the pot, I rubbed it well all over with cream, for two or three days, turning over, as I had read directions for large cheeses. I only did this," said Susy, laughing, "to make it look like a real cheese."

"Well, dear Susy, I think you have done yourself credit, and I shall certainly try the experiment; and in return, is there any little item of information I can give you to help you along?"

"Yes, indeed; I am anxious to learn how to prepare the rennet for making the custard. I do not forget how nicely you helped me the day father's company took me by surprise, and I had not an egg in the house, to make out a dessert. Everybody liked it, and I had to say I was indebted to the kindness of a friend, when asked how I made it; and to tell the truth, I asked father to get me the rennet that I have, for the purpose of having it to use in case of need. I think you said you put it in wine."

"Yes, Susy; if the rennet you have is the common size, I should cut half of it into pieces an inch square; put them into a quart of the best sherry wine, and let it stand a few days; it is then ready for use, and will keep as long as you need it. Any time when you wish a rennet custard, make the milk about as warm as milk just from the cow—a little warmer will do no harm, though I never let it get really hot. I always use milk that is perfectly sweet, and only a few hours old. After warming, put two tablespoonsfull of white sugar to a quart of milk, and when it is dissolved, stir in two tablespoonsfull of the wine in which the rennet is soaking; stir it in well; you can have it in a pudding dish, and serve it in saucers, as you did the day I made it for you; or you can pour it into custard cups. A little nutmeg grated over the top is all I do to finish it for the table."

"You say it only requires about half an hour to set it?"

"Yes; half an hour is sufficient, if properly warmed; but two, or even three hours will not hurt it, if it is not shaken or disturbed in the least."

"I thank you, Aunty, and will remember. I should think every house-keeper would like to keep some ready."

"So should I; and I make it a point to keep some on hand all the time—but speaking of the wine: I mean to try some of our rhubarb wine, and see if that will not answer every purpose. I shall know, at least, that it is not mixed up with any impure article."

"Well, Aunty, you must let me know how it answers, for father thinks by another summer he can make some wine, too, for his rhubarb did very well this year, and he thinks he shall set out more this winter; but I must not stay to chat any more; so good-bye, Aunty."

Editor's Repository.

CHANGE OF ADMINISTRATION.—This is the first allusion to politics that has ever been made in the CULTURIST; and now it relates only to itself, a change of proprietorship, and a removal of the office of publication from San Francisco to Sacramento. Our correspondents, therefore, and the Press generally of this State, and of the Atlantic States and Canada, that exchange with the CULTURIST, will please direct to Sacramento hereafter.

TO THE PATRONS OF THE CULTURIST.—The rapid increase of my nursery is absorbing so much of my personal attention, that I am not able to give the attention to this magazine which justice to my partner, Mr. WADSWORTH, requires; therefore, I have disposed of my interest in the same to him. In taking leave, editorially, of the public, I may be permitted to express the many obligations I am under to the editorial fraternity, for their kind notices of myself and the CULTURIST; and I hope that the patronage of the public will continue with the magazine, nor shall my pen be silent in behalf of its future usefulness. WILSON FLINT.

THE CULTURIST—after a regular publication of nearly two years and a half—during which, as local editor, I have always controlled its pages—is now as a property, by purchase, entirely my own. I have labored under many disadvantages, as regards its publication, from its first inception. I had no available cash means when I commenced it, and in this regard I am positive I have "held my own" admirably. For the want of a little of that very convenient commodity, *capital*, difficulties have presented themselves at times, almost insurmountable; and though always advertising the terms, "*cash in advance*," I have never been able to realize sufficient advance subscription to pay the current, monthly expenses of its publication, upon terms recognizable as a cash basis.

In addition to this, I have also suffered hundreds of dollars loss from the acts of irresponsible travelling agents. In order to avoid further loss from this source, I propose to adopt the plan of having every subscriber remit directly to me, at the office of publication. The great advantage that would result to me from this arrangement, would be, that the forty per cent. commission heretofore paid to travelling agents, and twenty-five per cent. to local agents, would be so much saved—in itself alone, a fair profit upon the entire enterprise; and the reduction of the price from five dollars to four per annum, was made solely with a view to this arrangement. I hope, therefore, that subscribers who are in arrears for the CULTURIST, will promptly remit their dues.

I have now a few more than seventeen hundred subscribers' names on my books, and yet of

this number who continue to take the CULTURIST from their respective post offices, I have not received enough since the commencement of the present volume, to meet the expenses of its publication. I would here remind those who have not paid for the current year, that they have now received—less one number—a half year's volume. It has cost me many dollars more than I have received, and I earnestly desire that my friends, or those friendly to the CULTURIST enterprise, remit without further delay. Upon the result of this appeal for the payment of my just dues, will depend that improvement which I have in contemplation, with the commencement of the new year; an improvement that will, I believe, be both ornamental and creditable to the magazine, and acceptable to its patrons.

I intend to call personally on most of my patrons, once during the year, in future; but I hope none will delay their remittances on that account. I shall endeavor to visit Petaluma, Sonoma, and Napa, and the country adjacent to those places, during the present month, November; and persons who are residents of those places, can settle with me all demands, and correct all errors that may have arisen from the negligence or mistakes of the CULTURIST agents.

W. WADSWORTH.

FRONTISPIECE.—In our October number we gave an illustration of what is believed to be one of the most efficient, yet simple, steam engines, giving the largest amount of power with the least weight of metal, of any yet invented.

In the present number we give an illustration of that marvel of the nineteenth century, Ericsson's Caloric Engine. We enumerate a few of the advantages this engine possesses over the steam engine:

It is inexplosive, economical, easily managed, requires no engineer, uses no water, consumes little fuel, and is adapted for all kinds of mechanical and agricultural labors. This motor may be confidently pronounced one of the greatest boons which the ingenuity of man has bestowed upon his race.

From the earliest ages, the unreliable and fluctuating powers of wind and water have been employed as motive agents. Recently, the more certain, but dangerous power of steam has been brought to labor for man. But now, for the first time, the common atmosphere is practically employed in doing human drudgery, and in saving the sinews, limbs, and lives of the toiling millions. It is made to operate, a harmless, controllable, certain, and universal motor.

Ericsson's caloric engine is no longer a subject of experiment, but exists as a perfect, practical machine, daily at work in numerous and diversified uses, with undeviating success.

I. Within the limit claimed for the motor, its power is certain, uniform, and entirely sufficient.

II. The machine is not attended with the numerous perils that attach to the steam engine, and make it so uncomfortable and dangerous a servant; but on the contrary, it is absolutely free from danger.

III. It requires no engineering supervision. Any person may take charge of it, or it may be kept in action by a few minutes' attention of the workman who is using its power.

IV. It consumes a very small amount of fuel, say thirty-three per cent. of the steam engine, and requires no water.

V. It does not raise the rate of insurance.

It is employed for job printing, and printing daily newspapers; working hoisting gear for warehouses, docks, and ships; mills of various descriptions; pumps of all kinds, from those used in raising water in houses, for domestic use, and those employed at railway stations, mines, and for pumping ships; also, for purposes of irrigation, and supplying villages with water.

The Scientific Press says of this engine:

"Time and space would be idly wasted, were we to enter upon descriptions, or add new praises to the subject we wish to treat of—the Ericsson caloric engine. It is now a settled fact that this motor in generally preferred by manufacturers and mechanics, when the power to be required is not too great. But the purposes for which this engine is particularly destined, and for which a greater field exists on this coast than elsewhere, is what we desire to state. The miners throughout the Pacific coast, especially those of quartz, have experienced heavy expenses in the transportation of steam powers, and the immense amount for the requisite fuel, engineers, repairs, etc. The caloric motor certainly must replace, or supercede steam in that respect. Many of our mining companies will, when they understand these advantages, embark with new vigor in their wonted operations, which may have heretofore failed, owing to such disadvantages. We have seen, in this city, the practicability of this power. A twenty-four inch cylinder engine worked to a charm, upon an improved quartz mill, with scarcely any expenses. In machine and finishing shops, or for other mechanical purposes, its compactness and utility must prove a great saving in time, expense and repairs. In a pamphlet before us, we have some of the highest testimonials from establishments who make use of this power."

As the conductor of an agricultural journal, we would bring this motor to the notice particulaly of the farmer. For pumping water for stock, or purposes of irrigation, it cannot be excelled by either wind or steam power. For threshing grain, it is the *ne plus ultra*, as the only fuel required is a portion of the straw, which is now annually consumed by fire, in immense piles, by very many of our best farmers. Those in want of a cheap, efficient, and safe power, cannot do better than call on Adolphus & Jungerman, sole agents for the sale of Ericsson's caloric engines, for California, Oregon, Utah and Washington Territories, No. 96 Pine street, San Francisco, where they can see them in constant operation.

California Sheep Raisers and Wool Growers Association.—We have received the following circular, which we heartily approve, endorse and commend to the attention of our readers.

Editor Culturist—Dear Sir:—Your attention is respectfully called to the accompanying constitution of the California Sheep Raisers and Wool Growers Association, with the hope that the objects of the enterprise may so meet your approval, as to enlist you in its aid and furtherance. All that is contemplated at present is, to collect from correspondence, all attainable information relative to the prices of wool in Eastern markets, the introduction of new breeds of sheep, the management of our own flocks, the diseases peculiar to our climate; and, in short, all matters pertaining to the business of sheep growing; and to distribute this among members, by means of circulars, to be issued periodically. Beyond this, the board of managers will, if circumstances render it necessary, provide means for the grading of wool, and shipping it to Eastern markets, at the smallest possible cost, leaving members free to avail themselves of the facilities offered, at their own option.

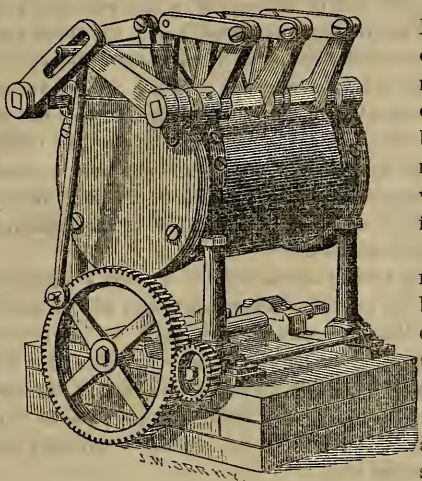
Should this enterprise meet your approval, we shall be pleased to enroll you as a member, and we solicit your good offices in procuring the names of others; we also request you to communicate any suggestions, or information that your own experience in the business, may have given you.

All communications and fees for membership should be sent to the address of the secretary, who will be in attendance at Sacramento, once or twice each month to receive them.

The constitution of this association is now ready for distribution, and copies will be forwarded to persons desiring them, on application to the undersigned.

James E. Perkins,

Secretary Cal. S. R. and W. G. A., Sacramento.



Mills' Quartz-Crushing and Pulverizing Machine.—This machine. as represented in the annexed print, has been thoroughly examined by competent persons, and pronounced by them to be superior, in every respect, to all ore-crushing machines now known, or in use; in support of which assertion, numerous testimonials have been freely and cheerfully accorded.

The machine consists of a series of circular rollers of solid iron, working on their edges, side by side, in an iron trough or cylinder, with an opening at the top of nearly one-fourth its circumference, so as to allow the levers or arms to vibrate the rollers alternately, thereby imparting to them first a heavy blow,.which crushes the ore, and then a powerful rubbing motion against the sides and bottom of the cylinder. The ore passing in through a hopper, at one end of the cylinder, is received by the first roller—which for that purpose is made somewhat smaller than the rest—and drawn into the space left between it and the cylinder, and which gradually diminishing towards the bottom, thence passing through the whole series of rollers, is discharged at the other end of the cylinder in the state of an impalpable powder, and ready for the amalgamating process.

The construction of the machine is so simple and strong, that it can hardly get out of order; and the flat and broad grinding surfaces of the rollers and cylinder having a uniform and comparatively trifling wear, will admit of its working for a very long period without any repairs, or replacing any of its parts, and thereby remove the great objection to all grooved or revolving mills, which, when used for hard substances, require frequent replacements of the grinding surface, and thereby entail much trouble and loss of time.

The pure metallic ore is not cut or ground to a powder by the action of the rollers, but simply rubbed clean of the quartz ore or sandy substances, which are ground fine; and the pure metal is therefore easily saved in its native state by any good separator and amalgamator.

The journals and bearings of the levers and arms are well protected from coming in contact with the fine sand which is so apt to wear them out; and requiring no oiling, like the revolving mills, there is no danger of any oil getting mixed with the mineral, which, as it is well known to miners, is so injurious to the amalgamating process.

The crushing and pulverizing is done so effectually by this machine, that seives can be dispensed with. It will work wet or dry; takes up but little room; is so constructed that it can be worked by hand, horse, water, or steam-power—according to size; requiring, from its peculiar motion, but little power comparatively; and can be transported to any locality where a mule can travel—being built in various pieces, none of them exceeding in weight a full load. It is easily taken to pieces and set up, requiring no mechanical skill, and for a foundation only wants a couple of logs to screw it on.

These mills are made of eight different sizes to suit the wants of large or small operations in quartz. We would urge the attention of those in want of quartz crushing machinery, to this very compact and really efficient invention. Fred'k Frank & Co., of San Francisco, are the agents for the Pacific states and territories.

Santa Clara County Agricultural Fair.—The fair of this society, which was opened at San Jose on the twenty-third ult., and continued for five days, was by no means, the failure that a few had anticipated. We were present, and can, therefore, speak from positive knowledge. In no respect was the exhibition at the cattle grounds, or at the hall, a failure. There are no better animals in the state, than were on exhibition there; the racing, as it regards time, we are informed, has never been excelled in California; whilst the exhibition at the hall of the society, as regards the size and beauty of the specimens of fruits, has not been excelled by that of any other fair of the season. It is impossible for us to enumerate the great variety of fruits and articles on exhibition, or give an extended list of the names of the numerous exhibiters, whose products graced the tables of the exhibition.

It is enough that we say, in our opinion, Santa Clara leads the column of single counties, in her annual pomological exhibit; whilst the financial condition of her society may well be envied by other societies with far greater pretensions. We do not arrogate to ourself the position of counselor to the society, recommending a discontinuance of the annual fair, or a "*fast*," for one year, on any other condition than that it give way to, or join its efforts with that of the Bay District Society, which has designated San Jose as the place of holding its next annual fair. We believe it will be well that every county or district hold its fair annually. Nothing less than the state society should be restricted to biennial fairs.

Bay District Agricultural Society.—This society held its first fair in San Francisco, during the first two weeks of October. In the exhibition of animals, farm products and implements, it proved a success; in its financial management and condition, something short of a complete success was achieved.

Errata.—In the prize essay, by Wm. Daniels—on the vine—in our last number, several errors and omissions were made, that need correction, in order that the author be correctly understood. On page 148, fourth line from top, the words "unsightly," "unprofitable," should have appeared between the words "of" and "gaps." In seventh line from top, same page, "point," should read "joint." Tenth line from top, "sheltered," should have appeared between the words "shaded" and "place." Page 149, thirteenth line from top, the word "shoot," should have been found between the words "main" and "from." On page 150, seventh line from top, "removed" should read "renewed." In sixteenth line from top, the word "remove" should have appeared between the words "and," and "it." In the same line, "divide" should read "distribute." In twenty-second line from top, page 151, the word "should," ought to have been printed after the word "and." In the third and fourth line below the twenty-second, "the ends so running," should read, "the crude sap running."

The American Pomological Society.—A correspondent of the Michigan Farmer, Mr. T. T. Lyon, gives the following account of the action of this society, at its recent meeting and fair, held at Philadelphia. Of the fair and its exhibiters, he says:

"The society was called to order by the President, Hon. Marshall P. Wilder, of Mass., who has so long honored it in that capacity, and who still retains his native vigor, as well as his devotion to the pursuits of pomology, in a remarkable degree. His biennial address is a lucid exposition of the progress of pomology during the past two years, and of its future promise.

"A large number of delegates are in attendance, from nearly every State in our Union, and the discussions are of the most interesting and valuable character.

"The following are some of the most prominent exhibiters: Hon. M. P. Wilder, Dorchester,

Mass., 150 varieties pears; J. H. Stuart, Quincy, Ill., 182 apples; Wm. Reid, Elizabeth, N. J., 126 pears; John Chambers, Burlington, N. J., 112 pears; Smith & Hauchett, Syracuse, N. Y., 100 pears and 30 apples; Ellwanger & Barry, Rochester, N. Y, 233 pears, 80 apples, and 50 plums; Franklin Davis, Virginia, 75 apples; H. R. Roby, Virginia, 22 pears and 25 apples; Oliver Taylor, 12 apples and 6 grapes; Col. Walter L. Steele, North Carolina, 11 apples and pears, Scuppernong grapes; T. T. Lyon, Plymouth, Michigan, 109 apples and 19 pears; Prof. J. J. Mapes, Newark, N. J., 24 pears; Frost & Co., Rochester, N. Y., 20 pears and apples; S. T. Altemur, Philadelphia, 8 pears and 5 grapes; Wm. Parry, Cinnaminson, N. J., 22 pears and 22 apples; Buffalo Hort. Society, 9 grapes, 37 pears, and 22 apples; B. Stratton, 40 pears and apples; Ellwood Thomas, Pennsylvania. 100 apples and pears; Dr. Boynton, Syracuse, 55 pears. To these many others might be added, but the above will suffice to show the nature and extent of the exhibition.

"At the foot of the room is very tastefully arranged a collection of Orchard House peach and plum trees, in pots; only potted last spring, and now bearing a fine crop of ripe fruit. Interspersed among these were pomegranates, bananas, and date palms.

"We extract the following description from Forney's Daily Press, as it illustrates the manner in which the exhibition is looked upon by the Philadelphians:

"'Pendant from these trees are clusters of luscious grapes—a bunch of White Syrian, weighing six pounds; one of Muscat, weighing six pounds; one of Black Hamburg, weighing eight pounds; one of Frankenthall, weighing four pounds. Beneath the shadow of these lay circles of peaches, plums, and berries; and above are placarded the names of the great pioneers of pomology—Downing and Cox, of America; Van Mons and Du Hamel, of Belgium. As one wanders through the mazes of ripe apples and dimpled pears, and sees gleaming through vistas in leaves, waxlike grapes and cranberries, the sense grows intoxicated, and the fearful struggle in the mind of Eve, to grasp the forbidden fruit, is comprehended in all its great temptation. We saw apple-pie melons (so called because pies made from them are scarcely perceptibly different from those made of apples) of three feet, long circumference. A single bough of pears, eighteen inches long, weighing twenty-three pounds.'

"A deep interest is manifested in both the exhibition and discussions of the society."

The Catalogue of American Fruits.—In his opening address, M. P. Wilder, the President of the American Pomological Society, made the following remarks relative to the revision of the catalogue of fruits, which contain much useful suggestion on an important subject, and which, if carried out, will tend to give a more complete and useful general knowledge of American fruit than has yet been attained. He says:

It has been our custom on former occasions to enlarge and revise our general catalogue by a discussion and vote on each variety. Great advantages have already resulted to the country and the world, from the catalogue of this society, which classifies our fruits, registers those suitable for general cultivation, those adapted to particular localities, those which promise well, and those that are pronounced unworthy of cultivation.

It will be remembered that, at the last biennial session, the chairman of the general fruit committee recommended the appointment of local committees in each state and territory, charged with the duty of producing and submitting to a special committee a list of the fruits cultivated in their respective localities.

From these local catalogues, embodying the ripest experience of the best cultivators in all parts of the country, it will be easy for the society, at its next session, to transfer fruits to the corresponding department of the society's general catalogue. I therefore respectfully recommend,

First, That no revision of that portion of our catalogue embracing fruits for general cultivation be attempted at this meeting.

Secondly, That local committees be appointed, each of which shall be charged with the duty of preparing a catalogue of the fruits in its own locality, on the same general plan as the society's catalogue.

Thirdly, That a special committee be appointed at this time, to whom these various local committees shall make their report during the year 1861.

Fourthly, That the special committee be charged with the duty of compiling, from these local catalogues, and from the present catalogue of our society, full lists of all the fruits therein named, properly classified and arranged, with due regard to nomenclature and terminology, and shall submit the same at the biennial session for its consideration and action. This labor, well performed, will redound to the honor of American pomology.

These recommendations are not intended to preclude a discussion of the merits or demerits of any variety now on our catalogue. On the contrary, they call for a full and free expression of opinions in respect to any department of the same, as this may aid the labors of the several committees; neither are they intended to preclude the addition of varieties to the list which *promise well.*

If this association had rendered no other service except to give to the world its present catalogue of fruits, it would have fulfilled an important mission; but it has done more; it has encouraged and originated many kindred associations, has brought together experienced cultivators, and made them teachers of each other.

By this action and reaction of mind on mind, many of the first principles of judicious cultivation are now fully settled and well understood.

Improvements.—An intimation was conveyed in our last number, that in this we should speak of changes proposed in the future of the Culturist, that would materially improve its appearance and usefulness. If sufficient encouragement is extended to our enterprise, we shall, with the commencement of the new year, introduce, monthly, colored plates of the finest specimens of California-grown fruits that we are able to obtain; also outlines and engravings of fruits, animals, implements, and machinery, to a greater extent than we have ever yet done. We have also secured the co-operation of able and practical correspondents, who will contribute monthly to the work, and we believe add greatly to the interest and usefulness of its pages.

S. F. Medical Press.—The October number of this Medical Journal is in hand. It contains several articles of interest, in the department of original communications; while the Editor's Table is filled with spicy and vigorous articles, on a variety of subjects. There is one fault, however, we think will be found with it by strangers who are not acquainted with the circumstances surrounding the editor, viz.: that there is too much said of matters somewhat personal. But while we think this will be the impression of strangers, it is different here, where matters are better understood. It is well known here that since his arrival in this city, the editor has been the leading spirit in every enterprise calculated to advance the medical profession of this coast; and it is equally well known that in everything he met with almost unheard-of opposition. It is very evident, too, as he says, that in vindicating his own rights, he considers he is vindicating the rights of the profession, and consequently does not deem these matters as personal, but as relating to the profession generally, whose rights he would vindicate. But though there is a degree of severity pervading these articles, there is still pervading the entire editorials, an earnest advocacy of the claims of medical men to more consideration than is generally

awarded them. This evidently arises out of a sincere desire on the part of the editor, to see the condition of the profession ameliorated. Some of these articles are written with such force and feeling as to lead the reader to the irresistible conviction that great injustice is done to the mass of medical men of honor and skill, and that no class of persons in the community make so many unrequited self-sacrifices. W.

New Advertisements.—We would direct the special attention of our readers to the advertisement of B. S. Fox, on the outside of cover. He talks very much like a man having full confidence in what he says, and the stock he offers for sale. We have visited his nursery, and are satisfied that it is not surpassed by any other in this State.

J. S. Harbison offers the finest locust trees in California; and his reputation as a bee-master, or apiarian, ought to be, and is, a sufficient guaranty that bees purchased of him are just what they are recommended to be.

Geo. G. Briggs, in his advertisement, offers fortunes to at least twelve of the lucky ones holding tickets in his grand gift scheme. For particulars, read advertisement.

To Make a Good Black Ink.—The Country gentleman gives the following recipe:

"Good ink may often be had by paying a good price for it—say about fifty cents per quart; but after the manufacturer has got up his reputation, he is tempted to sell a cheap and miserable article. The best way is for all to make their own ink, and save at least one thousand per cent., as ink is commonly sold at retail, between first cost and final price. But how shall we make it easily and cheaply? Thus: buy extract of logwood, which may be had for three cents an ounce, or cheaper, by the quantity; buy also for three cents, an ounce of bi-chromate of potash. Do not make a mistake, and get the simple chromate of potash. The former is orange color, the latter clear yellow. Take an ounce of extract of logwood, and ten grains of bi-chromate of potash, and dissolve them in a quart of hot rain water. When cold, pour it into a glass bottle, and leave it uncorked for a week or two. Exposure to the air is indispensable. The ink is then made. This ink is at first an intense blue, but after exposure to the air, becomes quite black.

Keeping Grapes.—You cannot keep grapes for any length of time in a cold grapery; dull days and frosty nights would soon destroy them, without a furnace and fire to dry the atmosphere and repel frost. A good method is to cut the small branch to which the bunch is attached, and close over the cut end with sealing-wax. They are then suspended in a dry, dark room, where a uniform temperature of about forty degrees can be maintained. They will require to be looked over at least once a week, in order to remove moldy or rotten berries. If the bunches are hung up in a reversed position to the natural mode of growth, the berries will hang more loosely, and the air will circulate more freely through the bunch. We have kept grapes two months after being cut in this manner; how much longer they would have kept we do not know; but they were plump and juicy—no shrivelled or dried up berries among them.—*Farmer and Gardener.*

Grape Mildew in France.—The *Journal d'Agriculture Practique*, of August 15th, states that the mildew on the grapes, in the wine districts of France, is more this year than ever before—owing, probably, to the cold, wet season. Where the vines have been carefully dusted with sulphur, and in good season, it proves an effectual remedy.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending Sept. 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By Thos. M. Logan, M. D.

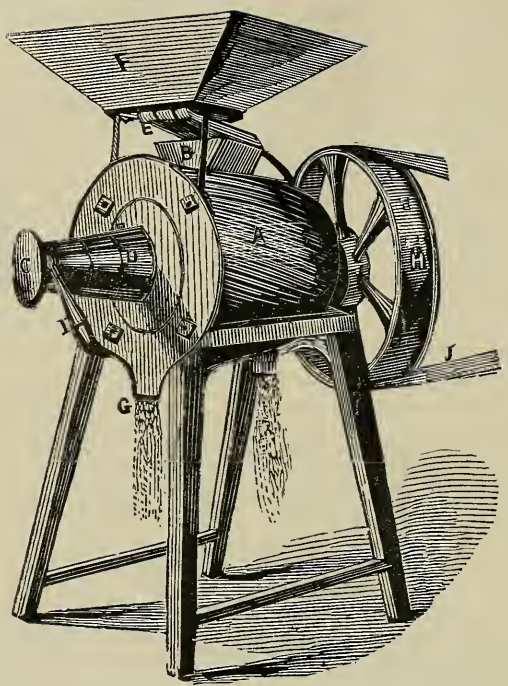
SEPTEMBER, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	30.058	30.051	30.026	30.058 inches.	— 0.023 inch.
" Minima	29.757	29.751	29.758	29.751 "	+ 0.027 "
" Mean	29.937	29.908	29.889	29.911 "	+ 0.009 "
Thermometer, Maxima	69.00	87.00	79.00	87.00 deg.	— 2.25 deg.
" Minima	57.00	67.00	63.00	57.00 "	+ 2.13 "
" Mean	61.80	73.23	67.73	67.59 "	— 1.20 "
Force of Vapor, Maxima	.470	.484	.591	.591 inches.	+ .018 inch.
" " Minima	.283	.296	.389	.283 "	+ .017 "
" " Mean	.387	.404	.443	.411 "	+ .002 "
Relative Humidity, Maxima	77.00	69.00	75.00	77.00 per ct.	— 2.95 p. ct.
" " Minima	54.00	25.00	39.00	25.00 "	+ 2.21 "
" " Mean	70.20	50.57	64.97	61.91 "	+ 0.61 "
Number of Clear Days	20	19	21	20 days.	— 1 2-3 days.
Number of Cloudy and Foggy Days	10	11	9	10 "	+ 1 2-3 "
Number of Rainy Days	.....	.....	.....	2 "	+ 2-3 "
Quantity of Clouds	1.0	0.7	0.6	0.8	— 1.0
Quantity of Rain and Fog	.....	.....	.....	0.063	+ 0.052 inch.
1st Days and 2d, Force of N. Wind	3 | 1.0	4 | 2.0	1 | 1.0	2 2-3 | 1.3	— 2-3 | 0.1
" " N. E. Wind	3 | 1.0	0 | 0.0	0 | 0.0	1 | 0.3	+ 0.0 | — 0.2
" " E. Wind	0 | 0.0	0 | 0.0	0 | 0.0	0 | 0.0	— 2-3 | — 0.5
" " S. E. Wind	9 | 1.3	0 | 0.0	3 | 2.0	4 | 1.1	— 2 1-3 | — 0.3
" " S. Wind	9 | 2.1	7 | 2.6	8 | 2.1	8 | 2.3	+ 2 1-3 | — 0.0
" " S. W. Wind	0 | 0.0	8 | 1.6	7 | 2.0	5 | 1.2	— 1 | — 0.7
" " W. Wind	0 | 0.0	3 | 1.0	8 | 1.6	3 2-3 | 0.9	+ 1 2-3 | — 0.2
" " N. W. Wind	6 | 1.5	8 | 1.6	3 | 1.0	5 2-3 | 1.4	+ 2-3 | — 0.4

Thermometrograph.

	Deg.		Deg
Highest Reading by day on the 17th	89 00	Mean of all Highest Readings by day	75.80
Lowest Reading by night on the 7th	50.00	Mean of all lowest readings by night	54.53
Range of Temperature during month	39.00	Mean daily range of Temperature during mo.	21.27

Remarks.—Changeful and capricious weather, peculiar to the autumnal equinox, has ruled throughout the month, and the usual serenity of our sky has been more or less disturbed by cumuli-clouds, affording convincing evideuce of the approach of the rainy season. On two different occasions—the 24th and 26th—rain actually fell. On the first date only a slight sprinkle was perceived; but on the latter, the rain measured over one-twentieth of an inch, as seen in the table above, accompanied by vivid lightning and thunder, and, for the first time since the wires have been set up in the Sacramento valley, the working of the telegraph was absolutely interrupted. On several occasions, in accordance with our previous observations, a sultry and stagnant coudition of the atmosphere prevailed—especially towards evening, rendered more oppressive by the large proportion of aqueous vapor in the atmosphere. On the eveuing of the 6th, another auroral display, the third seen this year, and the tenth recorded in our register, was witnessed. Though not equal in extent or brilliaucy to that observed about the same period last year, nevertheless, the rich roseate hue spread across the northern heaven, with its streamers of various shades, afforded a fine specimen of this peculiar spectacle. When first seen, at about 7½ P. M., it was in the form of a diffused rosy light, defined by an arch below, of about ten degrees radii above the horizon, and extending some fifteen degrees higher. This rosy light fluctuated from the N. W. to the N. E. very vividly, until forty minutes past eight P. M., when it became very faint, and continued so until about two A. M. the uext morning.

Among the various hypotheses and conjectures concerning the origin of this phenomenon, we cannot but regard the theory of Professor Olmstead, which is substantially that of meteoric disturbances, as the most reasonable and cosmical. He believes that nebulous matter, visible periodically as meteoric showers, or zodiacal light, emits this peculiar effulgence by the friction of the earth pluuging with its atmosphere through this vapor; the velocity being sufficient, although the material be rare, to develope the luminocity.



COLEMAN'S IMPROVED QUARTZ MILL.

THE

CALIFORNIA CULTURIST.

DECEMBER, 1860.

ITALIAN HONEY BEES.

DURING the last two years, we have heard a great deal upon the subject of the introduction of the Italian bee, its superiority, in many respects, over the common black honey bee, and the attempts made to introduce it, not only in the Atlantic states, but in California. There is so often a disposition to over-estimate the advantages or value of introductions from foreign countries, with a view of obtaining large or speculative prices therefor, that we have watched the progress of the introduction and culture of the Italian bee, and commented upon such successes as we could find available, rather than recommend positively anything from personal knowledge. We believe, however, that the superiority of the Italian bee is no longer questionable, even among apiarians who have large stocks of the common bee for sale. We take pleasure in introducing proof of this, that those who may have been in doubt, may have their doubts removed, and at once obtain this superior breed, just as the stock grower would a superior breed of horses, cattle or sheep.

Apiarians of the United States are generally aware of the persevering efforts of Mr. S. B. Parsons, of Flushing, L. I., to introduce the Italian bee, and that his efforts have, in the main, been eminently successful. We have thought it might be interesting to bee keepers, and many who intend to be, to hear relative to the genuineness of his stock. But without relying solely upon his statements, in regard to the intrinsic merits of his own hobby, we give the experience of others, in the shape of letters, entirely reliable and conclusive, and in closing our present remarks, would recommend to the readers of the CULTURIST a careful perusal of the advertisement of Mr. A. J. Biglow, in our advertising pages, of this famous honey bee.

LETTER FROM A. J. BIGLOW.

EDITOR CULTURIST:—Knowing that you have taken a deep interest in the propagation of the honey bee in California, I have taken the liberty to address you upon the subject of the Italian bee. I am on a visit to the Atlantic states, to satisfy myself whether they are actually superior to the common bee. I am fully satisfied that they are. I find a greater difference between them and the common kind, in their appearance, than I expected. The Italians are truly beautiful to one who is an admirer of the industrous little insect. There are two or three parties who have imported the Italian bee from Europe; but, as far as I could learn, there are only two queens in this country, that are direct from the mountains of Italy, where the black bee is not known; they are in the hands of Mr. S. B. Parsons, of Flushing, N. Y. I have procured a few queens of him, and shall use every effort in my power to try and get them through safely to California. For their capacity to gather honey I refer you to Mr. Parsons' statement, and others to whom he refers.

NEW YORK, Sept. 28th, 1860. A. J. BIGLOW.

LETTER FROM S. B. PARSONS.

Having received sundry requests from gentlemen in California, to supply them with Italian queens from the stock which I brought from Italy, I have made arrangements with A. J. Biglow, of Sacramento, corner of Nineteenth and J streets, to take out a number, from which I can supply these gentlemen, and some others who may desire them. He is now preparing the bees, and will soon be ready to leave. The terms on which he can supply them, will depend upon his success in carrying them, and will be made known soon after his arrival.

I obtained these bees in a section where no other race exists. I have not felt like endorsing all that was said of them by German writers, until they had been tested by reliable men here. However beautiful may be bright colors and graceful forms, I felt that these were of comparatively little importance; that the great question was, Will they make more honey than the common bee? My own experience, this summer, has been entirely satisfactory in this respect; but I am unwilling to rely entirely upon my own when I have that of others.

The following letters prove conclusively, that the progeny of those bees which come from Italy, have far surpassed the common bee, the past summer, in the production of honey. One is from the Rev. Mr. Langstroth, so well known to all bee keepers, as a careful, conscientious man, and the author of the best work on bees which has yet been written. Another is from Dr. J. P. Kirtland, a well known naturalist, of Ohio, whose simple word is sufficient with all who know his truthfulness, his habits of accurate observation, and his caution in giving an opinion on any subject. The third is from Mr. Brackett, published in the September number of the Agriculturist, and appreciated as the evidence of an unbiased man, who is as skillful an apiarian as he is a successful sculptor.

To these letters I would invite the attention of all who desire information of the qualities of this beautiful and industrious race.

FLUSHING, L. I., Sept. 27th. 1860. S. B. PARSONS.

LETTER FROM REV. L. L. LANGSTROTH.

I have three colonies (artificial swarms) to which Italian queens were given in June. All of the common bees appear to have died, and if we may judge from the working of these colonies, the Italians will fully sustain their European reputation. They have gathered more than twice as much honey as the swarms of the common bee. This, however, has been chiefly gathered within the last few weeks, during which time, the swarms of common bees have increased but very little in weight. The season has been eminently unfavorable for the new swarms—one of the very worst I ever knew—and the prospect is, I shall have to feed all of them except the Italians.

August 24th, 1860. L. L. LANGSTROTH.

LETTER FROM DR. J. P. KIRTLAND.

In your last letter, you expressed a wish to hear from me, the result of my experience with the Italians, etc.

1st. Their disposition to labor far excels that of the common kind. From the earliest dawn of day to the arrival of evening, they are invariably passing in and out of the hive, and rarely suspend their work for wind, heat or moderate showers—at times when not a solitary individual of the common kind is to be seen. Two hours, each day, their labors are extended beyond the working time of the last named kind.

2d. Power of endurance, and especially of resisting the impression of cold, they possess in a marked degree. Since the buckwheat, solidagoes and astus have flowered in this vicinity, the nights have been remarkably cold. This low temperature has, in a great measure, suspended the efforts of the common bees, and they have been eating their previously accumulated stores. Not so with the Italians; they have been steadily accumulating honey and bee bread, and rapidly multiplying their numbers. They seem peculiarly adapted to resist the chilly atmosphere, and high winds, which predominate in autumn, on the shores of Lake Erie.

3d. Prolificness they equally excell in. Both my full and half-blooded stocks have become numerous and strong in numbers, as well as in stores, at this late season of the year, when the common kind have ceased increasing, and have become nearly passive.

4th. Their individual strength is greater; and this is well illustrated in their prompt manner of tossing to a great distance, any robber that chances to approach their hive.

5th. Their beauty of color and graceful form, render them an object of interest to every person of taste. My colonies are daily watched and admired by many visitors.

6th. Of their moral character, I cannot speak favorably. If robbing of weaker colonies is going on, these yellow jackets are sure to be on hand. So far as my experience has gone with them, I find every statement in regard to their superiority sus-

tained. They will, no doubt, prove a valuable acquisition to localities of high altitudes, and will be peculiarly adapted to the climate of Washington Territory, Oregon and the mountainous regions of California.

CLEVELAND, OHIO, Sept. 13th. 1860. J. P. KIRTLAND.

The American Agriculturist says:—We are yet unable to offer any well founded opinion, as to whether the recently imported Italian bees will prove really superior to our common native bees, or not. They are being rapidly propagated and diffused over the country, and to secure this result the main effort is now directed. Another season will be required to determine their merits. The fact that so many of our oldest apiarians have considerable confidence in them, argues well in their favor. We have watched their multiplication from a single swarm, and if the rate of increase be as great at other points to which the queens are being daily dispatched, it will not take long to fill the country with them—if such a consummation be desirable. Below we give an extract from a letter, dated August 10th, written by Mr. E. A. Brackett, the well known sculptor, who is an enthusiastic amateur in bees also. His suggestion in regard to improving bees by care in selecting breeding queens, is worthy of attention. All kinds of domestic animals have been brought to a much higher standard by special care in breeding. Why may not our common bees be in like manner improved? No attention has been given to this subject, so far, as we know. Let some of our bee keepers try the experiment.

Who knows but that, in a few years, we may get a race of bees that shall rival the humble-bee in size, and in ability to extract sweets from a large class of deep tubed flowers, such as the red clover, and others, which are now useless for the common honey bee. We hope those who undertake the enterprise, will remember to try to breed out their stings. From a honey bee of the size of the humble-bee, with the sting developed in proportion, may the fates deliver us. (Talking of stingless bees, we may mention that our friend, A. O. Moore, Esq., who recently returned from a tour of several months in Central America, brought with him two varieties of stingless bees, which he left in our office for several days. They are quite peculiar and interesting, and we hope to give a further description of them, with engravings of their appearance, mode of depositing honey, etc.) Here is an extract from Mr. Brackett's letter, referred to above:

"* * * I think it too soon to form any certain opinion in regard to the Italian bees in this country. We must, therefore, still, in a great measure, depend on the statements of German bee keepers, and that is universally in favor of their great superiority over the black bee. Dzierzon states, that since he has Italianized his apiaries, his yield of honey has been double that obtained from the same number of common bees. My experience, thus far, satisfies me that thay have not been over-rated. The queens are larger and more prolific. The workers, when bred in comb of their own building, are longer, and their honey sacks larger. They are less sensitive to cold, and more industrious. In all my handling of them—and I have done so pretty

freely, lifting the combs, and examining them almost daily—I have never known one to offer to sting. A queen that I received in June, and introduced to a strong stock of bees, in eleven days filled thirteen sheets of comb with brood and eggs. There is, at present, scarcely a black bee in the hive, so rapid has been the change. Although I have taken from it large quantities of worker brood and sealed drones, the hive is still overflowing.

Allow me to suggest to you an idea that may be of importance. These bees come from the Italian Alps, where they have received no attention. They are in a state of nature, susceptible, in my opinion, of great improvement—at least as far as form and color goes—by culture and careful breeding. In order to do this, they should be allowed to build their own comb, as soon as may be, and the largest and best colored queens be selected to breed from—avoiding breeding in-and-in as much as possible.

I have received a letter from a friend, stating that one of his queens is quite dark; and he seems troubled about it. A little knowledge, if not a dangerous thing, is sometimes an uncomfortable one. Every one at all familiar with the common black bees, knows very well that their queens vary much in color, and I see no reason why the Italians should not do the same, within certain limits, and still be true to the race. Those who are anxious to have high colored queens, must resort to careful breeding."

As editor of the CULTURIST, we too, have the pleasure of stating, that Mr. A. J. Biglow, on his recent trip from the Atlantic states, with his Italian bees, stopped for a few days on the Isthmus, and while there succeeded in obtaining, also, two varieties of stingless bees, with comb and brood, which we shall describe by letter-press and engravings in a future number, perhaps in January.

THE APIARY.

PASTURAGE AND OVERSTOCKING.

EDITOR CULTURIST:—I am pleased to see that the subject of "bee pasturage" and overstocking is beginning to attract the attention of bee keepers, as well as the lovers of honey. Nothing will, in my opinion, do so much to advance and place the business of bee keeping on a firm basis, and in the rank it should occupy relatively to other agricultural products, as a correct knowledge of this subject.

It has been said that "bee keeping is overdone" in California. This may be true in one sense, but not in the sense in which it is generally understood. A certain sea captain quit the sea, bought a farm, moved upon it, and considered himself a farmer. He commenced operations in the spring by plowing a field and sowing in oats; the ground being good, and he being anxious to raise a large crop, he sowed eight bushels of seed to the acre. At harvest time he pronounced the business of oat raising overdone.

When a thousand hives of bees are kept on a square mile, we should not wonder if "bee raising was overdone." In the State of California—a country second to none

for bee culture—with honey worth from seventy-five cents to one dollar per pound, and perhaps less than a single ton of it produced during the year for market, who will say the business of honey raising is overdone? He who is well acquainted with the reason the sea-faring farmer got no oats, will readily explain the great lack of honey, when he is told that men have attempted to keep at least four times as many bees on a given amount of pasture as the field could supply. With one thousand hives of working bees to the square mile, there is no danger of increasing the amount, or reducing the price of honey, unless special provision is made for them.

The following experience of the present year may more fully explain this matter. At a place seven miles south of Sacramento city, and immediately on the bank of the river, I had an apiary containing one hundred hives of bees; most of them had the main apartment of their hives full, on the first of July. Desiring to have them make honey for market, I supplied them at that time with surplus honey boxes.

About the middle of the month they commenced to fill them, and were making good progress, when another stock, consisting of upwards of one hundred and twenty-five hives, were brought from a distance and placed within about a mile from my stock, and immediateiy adjoining the same pasture where my bees fed. There was then not less than four hundred hives of bees within a range of three miles long to one broad. The result was that my bees immediately quit work in the boxes, and were barely able to procure honey enough to fill the combs from which the brood emerged, and to subsist upon during the remainder of the season. Thus, a large amount of honey that would have been obtained from the stock, was cut off by the large additional stock placed in the same vicinity. While the latter were benefitted, to some extent, by their new location, (they having been removed from a place wholly overstocked) yet their gain would have been vastly greater had they been taken to an unoccupied pasture.

Mr. Langstroth, in his work on "The Hive and Honey Bee," gives the aggregate of bee products in some districts, as well as the number of colonies and products in others. This will be explained hereafter. "The proportion of wax to honey is about one to fifteen or twenty." And a hive containing one cubic foot, will, when full of comb, yield about two pounds of wax. From this data, it is easy to make the calculation, as well as ascertain the size of the hives used in different countries.

"The island of Corsica paid to Rome an annual tribute of 200,000 pounds of wax;" This would show 100,000 hives of bees, of one cubic foot each, yielding 3,000,000 pounds of honey; and as the island contains 3,790 square miles, would give 26 35-100 hives to each. It may be supposed that the island retained an equal amount for its own use, which would double the above figures.

"According to Oettl, Bohemia contained 160,000 colonies, in 1853, from a careful estimate; and he thinks the country could readily support four times that number. The kingdom contains 20,000 square miles." This would give 7 92-100 hives per mile, as four times that amount would give 31 68-100.

"In the province of Attica, in Greece, containing forty-five square miles, and 20,000 inhabitants, 20,000 hives are kept, each yielding, on an average, thirty pounds of

honey and two of wax. East Friesland—a province of Holland, containing 1,200 square miles—maintains an average of 2,000 colonies per square mile." (Heubel Bienenzeitung, 1854.)

"In 1856, according to official returns, there were 58,964 colonies of bees in the kingdom of Wurtemberg.

"In 1857, the yield of honey and wax, in the empire of Austria, was estimated to be worth over seven millions of dollars."

The following extract from "The Life of North American Insects, by B. Jaeger," 1859, explains why so many bees come to be kept: "In some countries, it is true, this culture (bee culture) has the preference before all other agronomical occupations." In the same work I find the following: "There is a 'Patriotic Apiarian Society of Bavaria,' which is a most laudable institution, and its laws ought to be translated into the language of every country where bees are known. It is not permitted for a peasant to have his own apiary, but a particular favorable spot is pointed out by the society, in which the different proprietors deposit their hives.

"This place is under the management of a skillful apiarian, appointed by the society, and it is ordained that no more than one hundred and fifty hives shall be kept in one place, and each establishment must be four miles distant. A trifling tax is levied upon each hive not belonging to the society; and thus the peasant looks forward, at the end of the year, to a certain profit, with a very slight outlay, and without any demand upon his time or labor. Should a poor peasant wish to become the proprietor of one or more hives, he applies to the society, who immediately accede to his wishes, and an annual reduction is made from his profits, until the society is repaid the value of the hives it has bestowed." J. S. Harbison.

Sacramento, Dec. 1st, 1860.

OAK KNOLL—ITEMS OF A VISIT THERE.

AGRICULTURAL PRACTICES.

We seldom visit the agricultural homes of our patrons, without deriving some useful hints from the methods in practice, for the cultivation of the soil, the growth of fruit trees, the management of vineyards, or the rearing and treatment of stock. We believe that such hints, properly set forth upon our pages, will be far more acceptable to the reader, than whole columes of newspaper flattery would be, even to the flattered. A recent visit to Oak Knoll farm—the property of J. W. Osborn, in Napa county—has placed us in possession of a few useful hints connected with the culture and management of soils and crops, that cannot but interest our readers.

The subject of irrigation is one upon which the proprietor has bestowed much thought, and to a limited extent, practically demonstrated its usefulness. Not that he would recommend the indiscriminate running on of waters to all grounds and crops, or among fruit trees, during the season of fruiting or summer's growth, for, at present,

he would leave all this to those who have had a longer experience; but what he would particularly bring to the notice of soil culturists is, the great value of flooding lands with water in unlimited quantities as a direct, positive fertilizer, even though the water may be apparently clear and pure. By simply flooding with water, from a clear mountain stream, during the winter months, a considerable field, that previous yields of grain have demonstrated to be comparatively poor, was greatly enriched, as subsequent crops show, with every indication of a permanent fertility having been imparted to it, beyond what could possibly have been derived from a mere saturation of the soil, with the requisite amount of moisture for the summer's product. That a positive fertility ensures from an abundant winter irrigation, is a fact clearly and satisfactorily demonstrated.

Another hint, as connected with the practice so common among California farmers, of burning their straw, or rather their stubble, previous to the fall or winter plowings, we deem worthy of consideration. Not that the practice of burning the stubble is at all new or original with the proprietor of Oak Knoll; but it is that he advances another reason in support of the practice of stubble burning, that we have never seen advanced before. Mr. Osborn's idea is this: that perfect pulverization and disintegration of the soil is essential to a successful culture. That, upon very many of the soils of the lower and warmer valleys, the frosts of winter are not sufficient to produce that degree of disintegration desired; but that the burning of a thick coat of stubble or straw on the ground, at least once in the course of a rotation, is highly advantageous—not so much from the fertilizers contained in the ashes of the stubble, as from the effect of the fire in calcining the clay and pebbles of the surface, and thus setting free their fertilizing atoms. He instances, in support of his position, the great fertility of the very tops of the hills, upon which wild oats are grown and annually consumed—the frequent calcination of the soil, quite as much as the ashes of the straw, contributing to their continued fertility. He is of opinion, however, that there may be a limit to the practice; that, if pursued annually, the earth may become so destitute of fibrous, vegetable, or humus matter, as to require much more rain to moisten or dissolve it, that it may yield freely to the mechanist of the plow, which it would not do without the fibrous element.

In this connection, *we* would also offer a suggestion, as to whether an occasional burning of the stubble of our grain lands, would not be the means of destroying, to a very great extent, the larvæ of insects, the seeds of many noxious weeds, and in some degree perhaps, the germ of smut that may attach to the stubble of wheat, preventing its further dissemination.

Though an advocate for the occasional burning of stubble, Mr. Osborn does not burn his straw piles. A very large quantity is consumed by the stock of the farm, and the remainder is converted into manure, by a rotting process, which we have nowhere else seen in practice. The practice consists of mixing salt and lime with the straw, in large piles or layers, but flat upon the top, that they may absorb all the rain that falls upon them. Two years is sufficient to render the straw available for manure, when it is carted out, spread and plowed under for the corn crops—the soil of a large

part of Oak Knoll farm being a rich, moist alluvium, is well adapted to corn culture.

A ramble with the proprietor through his extensive and admirably cultivated orchard plantations, brought to view a practice that, if intended as such, was new to us; at first sight, it appears like neglect, but in truth, it is quite otherwise; it consists in allowing a number of shoots to start and grow from the body of young apple trees—set in orchard—at or near the surface of the ground, all to be removed in two or three years afterwards. Mr. Osborn calls them *borer shoots*, because, when allowed to grow, the borer never, or very seldom, attacks such trees; the rationale of which is, that the shoots and their leaves, not only shade the stock at the surface of the ground, but what is of more consequence, these shoots promote a strong and rapid growth, and an enlargement of the stock at their place of union with it, which is one of the best preventives against the attack of the borer in all situations, as they seldom, if ever, attack a healthy, thrifty growing tree. These borer shoots are gradually shortened in for two or three years, when they are taken off altogether, as after the fourth year, trees are seldom, if ever attacked.

Another item of orchard practice consists in observing a certain rule, in reference to *cutting-in* peach, apricot, or other trees. It is this: always cut back to a lateral shoot, and let that shoot point outwards. If a limb is so cut back as to leave two or three dormant buds above or beyond a lateral, one or two of the outermost buds are almost sure to never start, or at best, to make but a feeble growth. This is productive of unsightly, sickly spurs, likely to affect the health of the tree, because it is the extremity of the limbs and their leaves, that more particularly elaborate the sap that gives growth and vigor to the tree.

It is a pleasure always, to visit the grounds of an observing, practical culturist; Oak Knoll presents, on all sides, evidence of correct practice, thought, and a ready hand. We reserve further items for future numbers.

THE BORER.—An esteemed patron of the CULTURIST, resident of Bodega, says:—Some of your correspondents wish to know what will prevent the borer troubling fruit trees. Tell them to get good thrifty trees, and keep them so. I have had some experience with trees for the last eight years, and have never lost a tree by the borer, unless it had been injured or neglected. There is no borer in this country that will attack a healthy, vigorous growing tree. J. M.

WINE FARMING AND MAKING.

WINE farming will, in a few years, become simplified, and almost as easily understood as corn planting. There is no mystery in it. Experience alone must teach the proper position and soil; the right distances apart for the vines; the most judicious methods of spring and summer pruning; and as for cultivation, keep the ground clean with the plow or cultivator, like corn. Certain rules are given in books, for vineyard culture, as pursued in the Ohio valley. These are the European systems,

adapted to our own country. It will be safe to follow these rules, until, by experimenting, we can find better. There is more room for progress in this branch of agriculture, than in almost any other.

Making the wine is as simple as making cider. The great bunches are cut from the vines, and all unsound or unripe berries picked off the bunch and thrown into a bucket, to make—with the addition of sugar—vinegar, or an inferior wine. The perfect grapes of each day's cutting are taken to the wine house, and in the evening, after being mashed in a barrel with a beetle—stem and berries—or passed through wooden rollers in a small mill, are put on the press, and the juice extracted. About one-third runs off without any pressure. The outer edges of the pomace are cut off for eight or ten inches, after the first pressing, separated with the hands, and thrown on top, when the power of the screw is applied, and another pressing made. This is repeated two or three times. The juice from the last pressing, being very dark and astringent, is put with the inferior wine. The other is put in large casks, filled about five-sixths full, to ferment and make the good wine. No sugar or brandy should be added to the best Catawba juice—or must—as it makes a better wine without, and is strong enough to keep well. One end of a siphon is placed in the bung hole of the cask—the other being crooked over, rests in a bucket of water.

The fermentation commences in a day or two, and the carbonic acid escapes through the water. In ten or fourteen days, the siphon may be removed, the casks filled up, and the bung driven in lightly—in a month, tightly. In mid-winter the wine is drawn off into another cask, and the lees of the wine, with the pomace of the grapes, is used to make brandy.

The wine will be clear and pleasant to drink in a month or two after the first fermentation ceases. The second fermentation occurs in the spring, about the time of the blossoming of the grapes; this is but slight, and it will be merely necessary to loosen the bungs; when it is over, the wine will be clear in two or three months, and safe to bottle, but that operation had better be deferred until November. And this is the whole process of making still wine—the wine for general use; and, being a natural product of the pure juice of the grape, it is more wholesome than any mixed or artificial wine, however showy and high-priced it may be.

Let the grapes be well ripened; the press, casks and all vessels perfectly clean, and then keep the air from the new wine, by having the casks constantly bung full, and there is no danger of its spoiling. This is the whole secret.

It is presumed that no one will go into wine farming largely at first; but take the precaution to test, by the cultivation of a few acres, the capabilities of the soil, position and climate, and the kind of grapes best suited to it.—R. Buchanan, in Ohio Valley Farmer.

DISCUSSION ON SHEEP.

Experience of Shepherds as to best breeds for Profit—Coarse and Fine Wooled Mutton—About Greasing Sheep, and Large Fleeces—Selection of Bucks—How to Cross Leicesters and Merinos—Advise to New Breeders—Young Beginners, etc.

THIS matter of sheep breeding is every year becoming of such importance to California, that we feel like giving all the information upon the subject in our power to obtain, derived from what quarter it may be. Sheep breeders in California, may derive some benefit from the experience of practical men engaged in a like pursuit, even in the Atlantic states, with soil and climate quite unlike our own. We therefore copy what we deem an interesting article on sheep husbandry, from the pen of a writer subscribing himself Steuben, in a late number of the Rural New Yorker.

I was pleased to notice in the Rural of the thirteenth inst., a sketch of the discussion at the state fair. Circumstances forbade my attention there, but I venture the assertion that those who were present at the discussion referred to, found that the most profitable and pleasant part of the whole thing. The show of animals and agricultural productions are of but little importance when compared with the interchange of views with sound, practical men, who have spent their lives tilling the soil.

I said in my article—which you gave in the Rural of Sept. 8th—that sheep raising was more my hobby than any other branch of farming. I was pleased, therefore, to notice the varied experience of the different shepherds given at your meeting for discussion. It is well that there is a diversity of opinion as to the best breeds of sheep in our country for profit. If all concentrated on one breed, the thing might soon be "run into the ground;" but as it is, we get a good supply of fleeces for the variety of fabrics wanted in our country, and then a variety from the flesh of the sheep to suit the varied taste of the mutton epicures.

While one contends that the mutton of the long-wooled is the most juicy and well-flavored, another that the South-down has the best flavor and is the best interspersed with fat and lean, I have heard others, whose opinions are equally worthy of credit, declare that the flavor of the fine-wooled mutton is as much superior to the coarser grades as the wool is finer.

I noticed with interest the reply of Pettibone to the question, "Do Vermont sheep raisers grease their sheep?" I perfectly agree with him about greasy sheep and wool, and I write this article more than for any other reason, to warn young beginners and new sheep breeders not to be too much elated with their final success with greasy sheep. They will find in the end that they are greasy, slippery things. First, If you buy sheep that have been artificially greased, it is a self-evident fact that you have caught a Tartar. Secondly, If you buy sheep that are strongly predisposed to grease, depend upon it that you have got a short-lived race of sheep, as the draft of grease from the flesh to the wool is so great that it is sure soon to impair the constitution of the animal, which can only be kept up by high keeping. Prolific ewes of a dozen years of age, will be very scarce and far between, from this variety.

Pettibone says: "Those sheep with extremely greasy fleeces should be discarded,

as the wool becomes cold and the sheep chilled. They will freeze almost as quick as a cabbage plant, and need blanketing in the barn." There may be a good deal in that, but I apprehend that is more from the draft on the constitution, than the cold nature of the grease in the wool. Such sheep are unprofitable, as the fat inclines so much to the outside, they are not a sheep in favor with the butcher. Again—the wool is becoming more and more a drug with dealers. They cannot sell it until their floors are well cleaned of the lighter varieties. An average of four and one-half pounds of clean wool to the flock should satisfy any reasonable breeder. The writer once bought (as a curiosity) the premium fleece taken off at a sheep fair, the weight of which was thirty and six-sixteenths pounds, and had it cleansed for the card, and when cleansed, its weight was reduced to seven and eleven-sixteenths pounds.

As the season is approaching to make selections of bucks for our flocks, I advise all new breeders not to look so much for grease in their selections, as to a compact fleece of even, fine wool; and also shun bucks that have wrinkles on the body, as they will be short-lived. Let the shirt fit tight to the body; a wrinkle or two on the neck, and a good flap across the breast, is well enough. See that your sheep has a stocky form, a peach-blow skin, wool compact and long, particularly on the belly, and certainly on the legs, as low as the knee joints or lower, and then, with good sheds and keeping, you will find grease enough at shearing, and be pretty sure to have a good constitution. From careful observation, I am satisfied that not one in ten of these extraordinary shearers attain to three-fifths in weight of their former shearings after they have passed into second hands.

Mr. Baker's remarks at the discussion were very sensible, and from my personal knowledge, he is a true model for new beginners.

I noticed Mr. Harmon's remarks as to his trial of the cross with a Leicester buck and Merino ewes. The failure he experienced is the general rule, and not the exception of that manner of crossing. I would go a good way to see a prime flock reared from that manner of crossing. It is "the cart before the horse;" but you reverse it, and cross with the fine buck and Leicester or coarse ewe, and you get a good staple of wool, and a fine, vigorous animal. The reason is obvious; the Leicester or other coarse-wooled ewes give a much larger amount of milk than the Merino. The Leicester lamb requires much more milk than the Merino, and with his Merino mother, is all the time starved for the want of a full stomach, and the consequence is, he grows up a stinted sheep, covered with thin, coarse wool; while on the other hand, the Merino lamb requires a less amount of nutriment, but gets from his Leicester mother a surplus, and he comes up strong and hearty, and invariably with a finer, better staple of wool than the other cross.

AGRICULTURAL EDUCATION.

EDITOR CULTURIST:—The season of agricultural fairs opened with that of the Sonoma county fair, and closed with that of San Jose, of which we have already given some description in your columns. The annual fairs, properly conducted and effort made by those having them in charge to elicit experience from the material before them, and the expression of opinion from practical agriculturists in regard to their business, will be of vast benefit to the agriculture of a state, which possesses so many novel and varied products as that of California. The programme of the fairs should invite such expression of opinion—the conventions of the different industrial interests should be made the main and prominent feature of the fair. This course will secure a personal interest in the undertaking, and show its fruits in a better satisfaction to those who give the time, labor and material aid to their support.

California farming embraces many citizens, whose early lives were spent in other occupations; such, from necessity, are keen observers, and prompt in their attendance at every gathering where information, in regard to their new vocation, may be obtained. In the Atlantic States and in England, among the most active supporters of the annual fairs, and largest contributors, are the amateur farmers and horticulturists—the men who have acquired fortunes in other business, from which they have retired to the more pleasant occupations of the farm. We have no such class here, but in their stead, men who have lost fortunes in other business, and perforce have taken to the farm and mother earth for their support; bound by no trammels of Eastern habit or precedent, but free to adapt themselves to the novelties of culture our soil requires, and free to introduce those articles of product to which our soil is so congenial. To these citizens the annual conventions are invaluable, from the ready interchange of experience in methods of culture, and comparison of varieties of products, these gatherings afford them; invaluable to our community as shown in the variety, extent and cheapness of our markets, and in thoroughness of culture and grandeur of extent of the grain, orchard and vineyard interests of the State, more of which business being in the control of men brought up to other professions, than would be found in any other country of rich agricultural product in the world, giving proof positive, that the mind once well trained to other business, readily adapts itself to the features of California agricultural life, and where too much haste to be rich has not intervened to make abortive effort, achieving a success of vast importance to the future welfare of our state, in so soon creating a class of thinking, talking, writing agriculturists, with whom improvement and progress in their calling, is the daily desire of their life.

We need a state agricultural society and district agricultural schools; a state agricultural school will not meet our wishes, or achieve our needful services; the same method of culture will not suit Los Angeles and Siskiyou—the great plains of Sacramento, or the valley of the Russian river. Our climate and soil varies in each county—the staple of profitable product in every district. The practice which is profitable to the farmer of the San Joaquin would be ruin to the farmer of Napa.

A state agricultural school would of necessity be local, and almost exclusive in its benefits to its surrounding country. The district schools, though the same in their immediate effects, admit of change, and a few terms in each would give our young men a practical knowledge of the agriculture of our state, and a power of comparison, such as under our present circumstances few can hope to achieve in a life time.

Col. Haraszthy, in his address to the Sonoma agricultural society, has rightly portrayed the difficulties of those desirous to engage in large farm operations, of obtaining competent assistants or overseers. On the present limited amount of educated agricultural talent, possessing a California experience, available for the more extensive operations of farm labor, it is dangerous for a man to undertake operations in which he has too much to rely on the abilities of others. This acts as a restriction on the engagement of capital in farm operations, and as new productions or tillage cannot be introduced without a surplusage of capital, this want of young men, educated to the higher branches of agricultural pursuits, is detrimental to the interests of the state, in retarding the development of our resources and narrowing the scope of our productions. The district farm schools will remedy this evil, and in a few years, give us not only young men of the necessary ability and education, but from the fact that such talent is available, affording new openings of business and employment, in desirable gainful branches of a business which affords more real enjoyments in its successful pursuit, than any other of earth's vocations.

Your conventions will do much to cause a proper spirit of inquiry and observation; your district farm schools will verify every important observation, and warm into life the embryo of every important agricultural fact. We have accomplished the work of a generation in the stimulus given our agricultural development of the last ten years. We can learn to live and make our state the world's garden, in spite of the prospective low prices of the next ten years, if we can have the district farm schools to educate and encourage our young men, and give aid and experimental support to the discoveries of our older agriculturists, and then we will disseminate practical new lights to agricultural progress, and through them show up the fantasies of mere theory. The establishment of working practical district farm schools, is more necessary in California than in any other agricultural country on the earth. Their advantages to the state and the community in which they are encouraged, can scarce be over estimated; their want is imperative and immediate; their establishment deserving the encouragement and attention of every one who is identified with our young state's interest.

The American farmer has reached the western bound of his migration; from necessity but a few years must elapse, when the California agriculturist, to exist, must be a good farmer. Sound policy would dictate that agricultural improvement should make part of our scheme of public education, to which no means would so readily adapt itself to the wants of different sections as *District Farm Schools*.

UP COUNTRY.

LOIS WEEDON SYSTEM OF HUSBANDRY.

THE British agricultural periodicals have of late bestowed considerable attention upon the Tullian system of culture, as revived and illustrated in the practice of the Rev. Samuel Smith, of Lois Weedon. As to the complete success thus far attending this revived system, there can be no doubt, the testimony being direct and to the point, and therefore convincing. But, after all, it can be termed nothing more than an improved garden system, for say what Mr. Smith may, from his own very satisfactory experience, it can never be adapted to extensive agricultural operations—for instance, such as we see in the Southern and Western states of the Union. But let it be restricted only to gardening purposes, and it would doubtless prove of great value to almost every community where it is desirable to make two blades of grass grow where one grew before—where the density of population demands every species of vegetables full up to the capacity of the land to produce.

The plan of Mr. Smith, copied from the practice pursued by Tull, some hundred years ago, is simple and efficacious. For twelve consecutive years he has, without a particle of manure of any kind, grown wheat year after year on half the land, reaping an average product of thirty-five bushels per acre. The method, in a few words, is this: The land having been kept open by the spade to subsoil depth, three rows of wheat are planted or drilled at one foot distance between the rows, thus occupying three feet, the next three feet being left vacant, and in this way alternating throughout the whole field. The intervening fallows are kept well tilled with the spade, and free from all weeds and grass during the growth of the crop. So also in regard to the spaces between the rows, using the "horse-shoe"—hoe, we presume. As soon as this crop is gathered, the vacant places are at once planted; and so on, year after year, without any change of crops, application of manure, or cessation in the course.

We must, therefore, conclude, remarks the British Farmer's Magazine, that the secret of the success of this system lies in the constant stirring of the soil under fallows, in order to promote the absorption of the elements of fertility; and, moreover, the proportion of that success depends upon the degree and depth to which the soil is stirred and comminuted. On no other principle can a result so contrary to all the hitherto received opinions and practice of agriculturists be accounted for. Every modern writer on agriculture, whether scientific or purely practical, has maintained the necessity of a constant application of manure, in order to compensate the soil for the exhaustion of a cereal crop.

The Magazine notes a remarkable corroboration of this opinion, as occuring recently in British culture. A piece of land had been deeply subsoiled, and comminuted with the Norwegian harrow, and planted with potatoes without manure. On each side of it the land was tilled in the common way, and also planted with potatoes. The latter produced one bushel per rod, but the former yielded two and a half bushels per rod, being an excess over the other of two hundred and forty bushels per acre. A similar result is obtained by Mr. Smith's spade husbandry over that of the plows, as practiced by seven other experimenters on the Tullian system. Their average product

was twenty-four bushels, three pecks (wheat) per acre; whilst Mr. Smith's was forty bushels.

It is worthy of remark that, so far from this system impoverishing the soil, it seems to improve it; and that the produce, after twelve consecutive years' trial of Mr. Smith, has increased rather than diminished—that of 1858 being forty bushels per acre. Hence, it is thus demonstrated that tillage alone, by stimulating the soil and promoting the absorption of elementary matters from the atmosphere, is sufficient to sustain its fertility.

As we have said above, the proofs of Mr. Smith's success in prosecuting the Tullian system, do not admit of a doubt. But, to bring the matter home, as to spade tillage, our people would never dream of adopting it any further than limited garden culture. In the vicinity of large towns, root crops, in fact, all kinds of vegetables, could, we doubt not, be raised economically, and of a larger size perhaps, and of better quality than can be obtained by the usual process. This is our opinion, and we hope to see the experiment made by some of the enterprising and intelligent culturists of Mobile and New Orleans. As regards field culture, we think by using the subsoil plow instead of the spade, very satisfactory results would follow, though of not so marked a character as Mr. Smith obtained.

As to your soil, bottom, I believe, has not yet been found—we mean the alluvial—but we are confident that a garden, treated according to Mr. Smith's plan, would exhibit a wonderful increase in product. And it would probably also show that drought would have no effect in checking the growth and cutting off the yield of crops.

How Roots Feed.—Can the roots of plants take up only such sabstances as are dissolved in the ground and thus prepared for them, or can they themselves dissolve them?

This question has been solved by Liebig, and by experiments before the society of natural science in Carlsruhe, he has proved that the roots of plants, by giving forth some acid, probably carbonic acid, do dissolve the alkali, ammonia, and phosphorus in the soil. Dr. Schimper showed the meeting, as a further proof of Liebig's doctrine, some pebbles which evidently had been eaten into by roots of plants. The fact was visible; the process, however, is not yet clear.

This valuable discovery of the great chemist goes clearly to show us why the rains and floods cannot wash out of the ground the substances forming the food of plants; on the contrary, we now know that the earth takes from the liquids which touch it, and solidly appropriates substances which the roots of the plants again absorb by their action. In the same way we clearly perceive how plants can draw from the soil substances which are solids, and which are not soluble by water.

PRIZE ESSAY ON IRRIGATION.

BY WM. THOMPSON, OF MILLERTON.

For which was awarded the First Premium by a Committee of the California State Agricultural Society, at the Annual Exhibition, held in Sacramento, Sept. 13th, 1859.

PART SECOND—PRACTICAL IRRIGATION.

THE facts in regard to water which I have been endeavoring to explain, and the inferences to be drawn from them, are of importance when we come to apply them to practical use in irrigating the soil; especially as variations in practice have to be adopted to suit the situation of the ground, the nature of the soil, and the quality and available quantity of the water to be applied. The principal use to which irrigation is turned in Europe—almost its exclusive use in the British Islands—is for the purpose of increasing the quantity of grass in meadows, for which it is a very efficient agent. "In the vicinity of Liegen, a town in Nassau," says an annotator of Liebig's Organic Chemistry, "from three to five perfect crops are obtained from one meadow, and this is effected by covering the meadow in spring by numerous small canals. This is found to be of such advantage, that supposing a meadow not so treated to yield one thousand pounds of hay, then from one thus watered, four thousand, five hundred pounds are produced." The Freegate Whins, and ten acres of poor, sandy land, in the vicinity of Edinburgh, were properly levelled, and formed into a water-meadow; the previous rent of the pasturage of the whole—amounting to thirty acres—being one hundred pounds sterling. After being irrigated, the meadow was let at from fifteen to twenty pounds sterling per acre. The fact of the great increase in the product of grass lands by such means is evident and indisputable.

The irrigation most suitable for the purpose of raising hay crops is that species of flooding which consists in spreading a sheet of water over the surface, and which I propose to call by the name of "surface irrigation," to distinguish it from another kind, of which I shall have occasion to take notice, which may not inaptly be called "subsoil irrigation." In the practical application of water in the former manner, the first thing to be done is to have the ground properly levelled, or otherwise laid out to suit the circumstances of the case. This done, and having been sown with proper grasses which have acquired sufficient strength, and which, we suppose, have been closely grazed by cattle, the water is trained in little aqueducts over the whole surface—say an inch deep—in the fall of the year, and allowed to remain for two or three weeks, interrupted by an interval of as many days during that period, which gives it a good soaking to begin with. By irrigating in the fall, the ground is preserved in a more equable and generally warmer state during winter, from the fact that water retains heat much better than earth, as well as acquiring it more slowly. It is consequently a great equalizer, which is a principal reason why it is so acceptable to grasses, which prefer a moderate temperature. The water thus applied should continue gently flowing so as to be constantly removing the partially exhausted water, and supplying its place with fresh water; and also, because water in a stagnant state to a certain extent undergoes decomposition, and is afterwards injurious, or, at least,

less beneficial to vegetation. Even with the water properly flowing among the roots of plants, decomposition soon commences, as is evidenced by the scum and bubbles, which, after a time, appear on the surface. Under such circumstances the soil is parting with its fertilizing components, for the bubbles are mostly occasioned by the escape of carburetted hydrogen. The farmer has to watch for such well known indications. They teach him when to turn off the water.

The land having received a good soaknig of two or three weeks duration—by a short interval—is left dry for a week or longer; at the end of which time it is watered for a fortnight or more, and sometimes this latest watering is repeated at the end of another week, the object being to render the land sufficiently compact from its being well saturated; the intervals being necessary to prevent the formation of scum and bubbles, or rather the decompositions which they indicate.

So long as the grass grows freely, more watering is unnecessary; but as soon as it begins to flag, the water should be turned on again. It is, as we have seen, a liquid manure, and being ready at hand, it is presumed no prudent farmer, who has his aqueducts and channels in good order, would neglect to do so on all such occasions. The invariable rule should be, to water often and for a short time at once, to make the land as dry as possible after every watering, and to take off the water the moment that any scum makes its appearance. The reasons are obvious. The roots of plants require air to a greater extent than it is to be found in water. When water is turned over the surface of the ground, as it soaks into the soil, the air contained in the soil mostly escapes—the space which it occupied being taken possession of by water, and no free ingress of air can take place till the water is withdrawn. Plants, in consequence, must linger under circumstances which would eventually cause their death from asphyxia. The sooner the ground is rendered dry after watering, the sooner they are restored to a more suitable condition. Why we should remove the water on the appearance of scum or bubbles, I have already stated.

The fact that water gets deteriorated, has induced variations in the way of using it, in conformity with the quality of the water to be applied, and the quantity of it which is available. Where spring water is used, little else is required but to spread it over the surface in such a way that a small quantity of water may irrigate a considerable extent of ground. When the water is more abundant, but from previous usage, or long exposure, has been reduced in its energy, it is of importance not to apply the same water over too great an extent of surface. Consequently, it is usual, if the ground to be watered is extensive, to have one class of aqueducts for bringing on the water, and another for carrying it off. When it is abundantly available, as in the case of irrigating from rivers, it is customary—to accomplish this object with greater ease—if the land is naturally level, to form it into raised ridges. By having it in this form, the water is brought on in channels along the central or highest portion of each ridge, from which it is trained over the slopes on either side, and then carried off in drains cut between the ridges, and into which it afterwards flows, by which means the whole grass is irrigated with water in the freshest state in which it is available.

When the ground is naturally sloping, the same object is accomplished, when desirable, with being at the trouble of shaping it artificially, by making catch-dams, which prevent the water which is supposed to be partly deteriorated by immediate use from encroaching on ground which may be easily supplied with water in a fresher state. The formation of level meadows into ridges is also advantageous, especially if the soil is of a retentive nature, on account of the greater facility with which they become dry on the water being withdrawn. This, as we have seen, is a matter of no small consequence, and ought to be taken into account, whatever may be the quality of the water applied.

Almost any description of grass will grow on water meadows, if the water is not allowed to cover the surface too long at once. But the grasses which have a natural predilection for moist soils will be found most productive, and if sown with others, will eventually take almost exclusive possession of the ground. We should trust to nature, and not be too conceited in our predilections for any particuler grass, but sow a mixture of several kinds, so that with proper management, in the course of a few years, our meadows may be covered with those which are most congenial to the soil and climate, and others having gradually given place to them. Among those which are suitable for water meadows may be mentioned the Meadow, or Fertile Fescul grass, *(Festuca Pratensis)* the Meadow Foxtail, *(Alopecurus Pratensis)* the Raughish Meadow grass, *(Poatrivialis)* Timothy grass, *(Phleumpratense)* and Florin, *(Agrostis Stolonifera)* all of which are tall grasses, and their natural situation is a moist soil. To these may be added Rye grass, *(Lolium Perene)* and the Great or Smooth-stalked Meadow grass, *(Poapratensis)* both of which, although not particularly moist soils, are found to grow well in irrigated meadows. By using a mixture of the seeds of these grasses, all of which are valuable, nature would be allowed a choice, and less risk would be incurred, than in using any one particular grass, which might be found less suitable than where we formed our acquaintence with it. Where the ground to be irrigated does not require to be shaped, and is already in grass, it might be imprudent to break up the present sod; but in no case would it be amiss to scatter the seeds of such grasses as I have mentioned over the surface, after the ground has been well soaked and the water withdrawn, as by such means more congenial grasses than those indigenous to a dry soil would be introduced, and better hay corps procured.

The superior claims of surface irrigation rest chiefly on the immediacy of the action of water in assisting vegetation, and the facility with which, by such means, it may be turned on or off according to circumstances. But in many cases, another kind of irrigation is adopted, which, though less serviceable for the purpose of growing hay, is used extensively, both for that object and for pasture lands, and also in warm countries, as an auxiliary in raising grain crops and fruit. This is what I propose to call by the name of "subsoil irrigation." According to this method, the water brought in aqueducts and channels to the fields where it is used, is not spread over the surface as in the other cases, but is allowed to soak into the subsoil, and thus moisten the surface in a gradual and natural way. It is neither more nor less than

draining reversed. In a moist climate its benefits extend no further than in enabling those who use it to grow in greater abundance those plants which prefer a moist soil. In dry climates it often enables the inhabitants to grow plants which otherwise they might not succeed in raising at all.

There are many meadows in England which are watered in this manner—some of them devoted to hay and some to pasture. If they are less productive of hay than those which are watered in a different manner, they require less skill in their management, and are available in many places where the situation of the land does not readily permit surface irrigation.

The channels, once made, require no further trouble. In these the sleepy waters which have been separated from the adjoining river glide slowly and imperceptibly along—just fast enough to prevent stagnation. They are generally pretty deep, and in some cases too wide to leap. One has therefore to look to the footpaths, or he might otherwise get bewildered and entrapped among them, as I have sometimes done.

The effect of the water thus brought in multiplied ramifications through those delightful meadows is half magical. Grass, cattle, trees—everything is thus improved —I had almost said brought to the highest state of perfection.

To render subsoil irrigation of more extensive use, and especially for the purpose of applying it in assisting the growth of green plants, and for horticultural uses, it has been proposed to assimilate it more nearly to the reverse of thorough draining, by conducting water in covered channels through fields which are naturally too dry, in the same way as in the other case, it is drawn off from those which are too wet; and a patent is said to have been taken out in England for that purpose. It is an interesting proposal, and much benefit would accrue, in cases where the land is meant to be cultivated in the usual way, by having the multifarious ramifications of the aqueducts covered up. But we must not be too sanguine of its practicability. It generally takes but little water to render land too wet, because, in such cases, its overmoisture usually proceeds from the retentiveness of the subsoil. Where lands are too dry, it almost invariably proceeds, in such countries as England, from the subsoil being unusually porous. It must, therefore, require a much greater quantity of water to render such land moderately moist, than is carried off a field of the same extent, which is too wet, so much, that it may often be impracticable to moisten it to the desired extent by means of covered channels; or, at all events, not consistent with prudence to attempt to do so in ordinary field cultivation.

I believe that subsoil irrigation is likely to be of much greater utility in California than surface irrigation. But whichever is used, we must not forget that, in either, or any case, the subsoil has to be well soaked, and that any attempt to irrigate the surface while the subsoil is too dry, is a mockery which must end in disappointment. In the county of Frezno, the thermometer occasionally shows in summer, a maximum heat of one hundred and twenty degrees in the shade; the whole district gets scorched, and the soil dried, as if in an oven, to a depth of twenty feet and upwards. On such ground I have seen gardening attempted, and little channels made to lead the water,

(which had been pumped up) over the surface, without any reference to the state of the subsoil; the water did not spread, (how could it) but went straight downwards—the edges of the beds near the channels being too wet, and the centers of the same beds too dry.

Although, in England, it is usual, in most cases where subsoil irrigation is adopted, to turn the water off in winter, by which means the channels, which supplied the meadows with water in summer, become so many drains, through which the water which falls in rain is carried off, at a season when it would be detrimental. It is evident that, in most cases in this state, subsoil irrigation should commence in the fall, as surface irrigation is presumed to do in other places, and that we ought to rely on having the subsoils of the fields to be irrigated sufficiently soaked, at a time when the natural rains and little evaporation of the season contribute to make it a comparatively easy matter.

In subsoil irrigation the channels should, if possible, be nearly on a dead level, having just enough fall to make the water run, but so as to be scarcely visible, by which means a much less supply will accomplish the same object, and it is likely to be done more effectually. They should be pretty deep, so as to admit of the supply of water being regulated by raising or lowering it, and should not be too far apart, as every practical farmer knows. A proper distance from the surface for the water to stand at in summer, would be about eighteen inches, for grain and grass crops.—In winter, after the subsoil has been sufficiently moistened, the comparative depth of the water, or its admission at all, must depend on the state of the soil, which would have to be seen before any advice could given in the matter. For irrigating orchards, the distance of the water from the surface would require, at all times, to be considerably greater than in irrigating for grass or grain—in consequence of the much greater depth to which they extend their roots, and in accordance with the experience of gardeners.

By adopting this system of irrigation, we would be enabled to grow grass, grains, and roots, in endless succession, and in whatever order we might think most profitable or convenient, in many cases two or more crops in one year. When one crop was grown, instead of having to wait till the rains of winter had moistened the soil, we might, if we found it expedient, fill our channels and raise the water over the surface of the ground, so as to moisten it as thoroughly as it could have been by natural means, or, at all events, so far as to experience no difficulty in the germination of seed sown at midsummer. As Mr. Eno remarked, in his oration before the society: "We can render ourselves, in a great measure, independent of the seasons; but to do so must render art subservient to the great advantages which we possess."

I can fancy the poet—the especial poet of the seasons, who felt their power—as he stood on Richmond hill, and contrasted in his mind the glories of the southern land with the sterner beauties of his native Scotland, exclaiming, in a burst of natural eloquence—

> "Heavens! what a goodly prospect spreads around,
> Of hills, and dales, and woods, and lawns, and spires,
> And glittering towns, and gorgeous palaces!"

And dream of the bright features of California, when a similar industry shall have transformed them to a similar extent. But even there, how turn the heart and eye to the emerald water-fed meadows which skirt the Thames in all its windings! We overlook the gaudier attractions in the panorama, and sigh for the blessings of the country to be found amid such green retreats, and those natural enjoyments, without which, wealth and honors fail to satisfy us.

ESSAY ON IRRIGATION.

BY CHAS. MOCK, PETALUMA.

TEN years ago, California was regarded by many in the East, and by many who came here to the mines, as wholly unfit for the purposes of agriculture. It was, however, soon admitted, that by irrigation, the soil was not unproductive. One of our members to Congress, in a speech there, as reported, asserted that no lands here were of value, except such as admitted of irrigation. Many yet entertain the opinion in the East, or did so recently. Not long since the New York Tribune accounted for the large reported yields of wheat here by asserting that it was by means of irrigation. Oregon correspondents of Eastern papers have asserted, rather recently, the superiority of Oregon in fruit raising, because California orchards required irrigation, which was not the case in Oregon. It would seem that ten years' occupancy and experience here would have settled the question as to the relation of irrigation to necessity or utility; but it has not been done, for the question is yet an open one, with disputants *pro* and *con*. I venture on proof of the following propositions:

1. The right use of irrigation here, within range of its profitable adaptation, is equivalent to the effect of alternating showers in the East; or we may say that irrigation here, with good judgment, is superior in results to alternating showers, as we may control or limit the application, so by our dry season to admit young trees to ripen their prolonged summer growth of wood, which was not the case under alternating showers in the East, where late rain sometimes induces late growth, which is subject to frost blight and other diseases. Irrigation can no more induce disproportion, between root and top, than alternating showers, and we have never heard that a plenty of rain in the East is regarded as injurious in this respect. None, I suppose, who have any experience will deny that, in our clay lands, the tendency of young trees, grafts and seedlings, without irrigation, is to form vertical roots, sometimes a single long tap only. This is not the case under irrigation, which induces the formation of laterals and a more perfect system of roots.

2. There are some soils in certain localities here, which continue moist up to the surface under cultivation, and so continue through the dry season. The Bodega potato lands are of this quality, and the same kind exists elsewhere. Such lands are sandy or silicious, and are said to be underlaid with hardpan, or soft stone, in which a perfect capillary arrangement exists. This capillary attraction may be

illustrated by setting a dry, porous brick in shallow water, or on a wet surface; if protected from evaporation, the pores in the upper end will soon be filled by this attraction which minute spaces have for liquids. In such soils, a continued upward flow of water exists, which is not the case in clay lands, where the capillary attraction is very weak.* In this, trees and vegetables must run their roots deep for their supply of moisture, which, by capillary attraction, as in some soils, is brought near the surface, and obviates the want of long vertical roots, as in clay soils. The condition of this moist soil and the growth upon it, differ not from the condition and effects of irrigation, or alternating showers; it must be hard to conceive how any difference as to effect can exist between a given quantity of water, enongh for healthy growth in a given quantity of soil, to come by capillary attraction from deep below, from the clouds, or the usual process of irrigation. There can be none; for we find that young trees, in this moist soil, make the same system of lateral and divergent roots, that grow by irrigation or alternating rains. Authorities assert, and the assertion is axiomatically true, that the condition most favorable to the certain and vigorous growth of trees, transplanted or otherwise, is the existence of a good system of lateral and divergent roots, which result to irrigation, capillary supplies and alternating showers. Moist or capillary soils may occasionally produce a better system of roots than is done by irrigation; but this is the exception, and not the rule. Some seem to suppose that a young tree acquires a thirsty habit, for not having been stinted for water. Its parts may be proportionately enlarged and extended, but its future wants will not be greater in proportion to its enlarged size than of a stinted individual.

3. As to utility of irrigation, the laws of nature are the same in all the world; and if the wonderful fruitfulness of Egypt results wholly from irrigation, it would be remarkable if it were of no advantage to us. But little explicit direction can be given as to its practical use; that will be varied by regard to position, as warm or cool, level or inclined, and as to soil, as clay or silicious; experience and common sense must suggest what pertains to its beneficial use. An abundance of water will, to some degree, obviate the want of cultivation, and good cultivation will obviate the want of much water.

Irrigation may be advantageously used, especially in warm soils and positions, in the nursery, promoting healthy growth and hastening to bearing capacity, and also to promote the vegetation of seeds during the dry season, thus enabling us to raise a succession of vegetable crops in the kitchen garden. In many soils it would increase the product of Indian corn.

But for the production of our principal crops for market and home consumption, *i. e.*, of cereals, potatoes, brassica, squash, melons, etc., irrigation is not, as our Ore-

* Water is held consequently and absolutely more in clay than in any other soil. The slowness with which it absorbs and parts with water, indicates that the capillary force operates very little; it cannot dry without cracking or a displacement of its particles. It is much like wax, or rasin, as to its conducting power. It continues moist or wet under cultivation from its retentive quality, and is peculiarly adapted to our peculiar climate, *i. e.*, our dry season.

gon and Atlantic friends suppose, necessary; nor do our orchards, within the range of the breeze and fog of the coast, under ordinary cultivation, require artificial supplies of water; but that which may be dispensable to the lower and exterior region, may be indispensable to the interior.

The controversy as to the best effects of irrigation was first started by Oregon nursery men, in order to disparage California raised trees; and it has been continued mainly by parties here, who, on soils with capillary supplies, have supposed, or assumed to suppose, that their trees were raised under circumstances so different from the effects of irrigation, that they might join the Oregonians in disparaging their irrigating competitors. It is a fact, potent to all, that some of our first planted, most thrifty and productive orchards, without irrigation, were from trees raised by irrigation. It is scarcely possible for irrigation, with knowledge of adaptation as to soil, time and quantity, to injure or abate the vitality of trees or plants; it would be as false to assert that our dry season is the rule of nature's order everywhere, and alternating showers the exception to be deplored. Our peculiar climate may be regarded as an exception to nature's order; but the wisdom of the Creator has so adapted climatic peculiarities and soil to each other, that nature's rule, as elsewhere, would be ruin to us.

ESSAY ON THE PEACH CURL.

BY CHAS. MOCK, PETALUMA.

A PRELIMINARY question to be settled in the discussion of this subject is, whether the cause be climatic, or incidental liability to disease, or the attack of insects. I assume that the cause is wholly climatic, and being so, does not admit of practical remedy. In support of this position, I offer the following reasons:

1. The spring and summer seasons here have been gradually becoming cooler since the winter of 1852–3. The spring seasons of '53–4–5 were distinguished as having more mild, growing weather than has occurred in the same seasons since then. During those warm seasons, the American peaches (so called) did not curl; it was then affirmed that they were unlike the California peach, which did usually curl. Since '55, the spring and early summer seasons have been getting gradually cooler and more damp and foggy, and the peach curl has prevailed with correspondence to this gradation of damp and cold.

2. The cause cannot be insects, for its manifestation would be anomalous, *i. e.*, confined to a cool temperature and a moist atmosphere; for, on the occurrence of warm weather, the expanding leaves no longer curl. Cold and damp are unfavorable to insect life, while myriads exist within the tropics, and abound only in summer heat elsewhere.

3. The cause cannot be disease, for curling trees grow off with their usual vigor on the occurrence of warm weather.

5. The cause, then, being climatic, there can be no practical or general remedy;

it would be as to attempt to protect peach orchards from the effects of spring frosts. Our only resort is, to select and propagate those varieties only, which do not usually curl. The following, in the climate of Petaluma, and in most of Sonoma county, lying under Bodega fog, do not usually curl, namely: Early Ann, Tillotson, York, Cooledge's Favorite, White Imperial, Large Early Rareripe, Malta, Royal George, Pineapple Cling, Red Magdalen, (not Decourson) Harper's Cling, Crawford's Early, Orange Cling, President, Snow, Emperor of Russia, Hyslop's Cling, and others, I suppose, that might be reported. The following varieties have been found to curl: Earliest White Nutmeg, Early Admirable, Early Newington, Early Strawberry, Cole's Early, Baltimore Beauty, Newington Cling, Royal Kensington, Grosse Mignone, Scott's Early Red, Barrington, George the Fourth, Late Admirable Cling, Old Mixon Cling, Old Mixon Free, Yellow Alberge, Bergen's Yellow, Crawford's Late, Brevoorts, Large White Cling, Morrisiana Pound, Red Cheek Melocoton, Washington Free, Washington Cling, Morris' White, Late Heath Cling, Monstrous Pompone, Ward's Late, Fox's Seedling, Lagrange. Most of the foregoing are described by Downing.

I suppose our climate, or wherever the curl prevails, is unfavorable constitutionally to the peach; that continued reproduction from seed would tend to deterioration, all ultimately becoming subject to the curl, as is the case with the California peach, which has been propagated here only by seed. It is also possible, that our peaches that do not curl, under excessive bearing and unfavorable climate, may gradually become deteriorated, and require to be replaced by importations from the Atlantic states or the intermediate region.

Downing asserts that the old pears that have become blighted and diseased on and near the northern Atlantic coast, have become so from the effects of sea breeze, or unfavorable climate, which as analogous cause may effect the peach here. The northern half of the temperate zone is probably climatically adapted to the apple and the pear; while the peach is at home in the latitudes intermediate to the above and the tropics; for, in the Southern states, the curl and yellows are not known.

It may be pertinent to this discussion to suggest the process of the cause producing curl.

The leaf in trees performs the same functions in the living organism, that is performed by the skin and lungs in animals, to wit, perspiration and respiration. Obstructed perspiration in man by cold, increases the action of the lungs, and where that organ is deficient, as in persons of consumptive habit, this increased action results in the formation of tubercles in the lungs. Leaves in performance of their healthy functions, largely exhale water, corresponding to insensible perspiration in man. The continued repression of this exhalation by cold and damp, induces in the leaf what is analogous to tubercles in animal lungs. This tubercular analogy is more apparent in some kinds of young pear trees, in these assuming a knotty or tubercular appearance. The effect of obstructed healthy action of the skin, in man, commonly termed "taking cold," is not uniform—in some, resulting in consumption; in others, passing off without apparent injury; while some are wholly exempt under the same cause by

which others suffer. So in the operation of causes tending to functional derangement in the peach and other trees, some are constitutionally liable to injury, while others from natural habit are exempt. Thick leaves, as in the apricot and almond, is a condition inducing exemption from curl. This is quite apparent in some of the non-curling varieties of peach, but less so in others. It is possible that exemption depends on the greater porosity of the leaf—a distinction analogously known to exist in the skin of the horse and ox, and also in other animals. The only remedy yet suggested, *i. e.*, protection by walls and root pruning, is suggestive of the true cause. In the lee of walls and houses, a dryer and warmer state of atmosphere prevails, more favorable to healthy growth of functional action of the leaves. Root pruning may weaken the capillary action, and so lessen the supply of sap as to prevent curl; but neither remedy can be extensively available. Our only practical remedy is to plant only the varieties that do not curl, and to bud the curling varieties already planted, with the non-curling sorts.

CHOOSING A FARM.

TO the young man who has decided to become an intelligent farmer, and is about to engage in the ennobling pursuits of agriculture as a life-business, who has distant visions of a happy home amid the quiet scenes of nature, where he can possess the comforts and enjoyments which he has faith to believe can be obtained by the strength of his manhood, and whose ambition it is to excel in this most honorable of employments, or to him who has become wearied with the cares and anxieties of a professional life, and sighs for a peaceful repose at the eventide of his existence, many considerations present themselves as to the character of the spot which is to become the scene of his labors, and rendered attractive by an association of a thousand ideas or fond remembrances, never to be forgotten.

The ancient writers on agriculture, who lived in warm countries, where the heat and moisture of the air had sensible and frequently very dangerous effects on the health of the inhabitants, were very particular in their directions for the choice of farms or estates, and of the spots where houses should be built, so as to avoid the inconveniences arising from the climate, or from the quality or situation of the ground. The Romans had pleasure as well as profit in view, when they bought a farm; and therefore they laid it down as a rule that no degree of fertility should tempt a man to purchase an unhealthy district, nor the most pleasant situation in a barren one. "Buy not too hastily," said the wise Cato, "but view again and again the purchase which you intend to make, for if it be a good one, the oftener you see it, the better it will please you. Examine how the neighboring inhabitants fare. Let the country it lies in be a good one; the ways to and from it good, and the air temperate. Let the land, if you can choose your situation, be at the foot of a hill, facing the south, in a healthy place, where a sufficiency of laborers, of cattle and of water may be had. Let it be near a flourishing town, the sea, or a navigable river; or border-

ing upon a good and frequented road. It is best to purchase from a good husbandman and a good improver." Another ancient writer observes "that the farmer ought to be stronger than the farm, because in the struggle which will arise between them, if the farm be too strong for the farmer, he must be ruined." That is, if the extent of the farm be such that he cannot bestow a due culture on every part of it, he must be a loser. This wholesome advice has come down to us through the ages, and is eminently worthy of consideration by all who are desirous of possessing the requisite essentials to a good estate.

The first matter of importance, after choosing a location, is to possess no more land than can be well taken care of. The great error of American farmers is attempting to cultivate too much land, without the application of sufficient labor and manure. This crying evil stares all our farmers in the face with tremendous emphasis. We do not yet know the capacity of our farms, and we never shall know it until we give to each and every tillable acre we possess, the most thorough cultivation, by which is meant the production of maximum crops with the least expense, ever keeping in view the continued fertility of the land. Again, choose a good soil. A thorough chemical analysis would certainly prove the constituents of any soil, and its adaptedness to particular crops; but the process is long, tedious and exceedingly delicate, and none but a skillful chemist can perform in a proper manner. For the formation of a productive soil, it is absolutely necessary that there be an intermixture of at least three earths, viz., clay, sand and lime. Plants will not grow in any one of these alone, nor will they flourish in any two of them, if the third be entirely wanting.—Any one of common discernment, can determine the presence of the two first; while if the latter is absent, sorrel will grow naturally and profusely. The character of a soil may be well determined by observing what it naturally produces. A heavy, hard-wood forest indicates a strong, fertile soil, capable of yielding superior crops of all kinds. The soft-woods—pine, spruce and fir—show an inferior one, easily affected by drought, and much more expensive to cultivate to secure with certainty paying crops.

Facilities for irrigation and drainage are not to be overlooked. The annual deposit of a small quantity of sediment, by the inundation of rivers, causes a wonderful growth of grass without the necessity of cultivation for a long series of years. Sometimes a little noisy, babbling brook will irrigate acres, and bring down from the mountains elements of fertility as precious to the farmer, as the golden sluices of California to the miner. Some portions of many farms are totally unfit for cultivation, on account of the superabundance of water which they contain. These spots are so many eyesores, and hills of expense, and should be noted, and the means ascertained by which the superfluous water can be removed. If such lands cannot be drained, the estate containing them should be shunned as quickly as the choke-damp of a cavern. It would be, nay, *it is*, the height of folly for a man to spend his time and strength in cultivating a *soaking* soil. It was a beautiful discovery of Anderson, that by simple drainage, the waste places of earth could be converted into pleasant oases.

Before purchasing a farm, a man should decide what branch of farming will probably be of the greatest benefit to him, and locate where it can be most successfully followed. This may partly be determined by his own tastes and proximity to market. One may have a capacity for breeding superior stock, another for growing fruit, and a third for making butter and cheese. In an appropriate spot each might, and probably would be successful in his own department; while in an unfavorable one, complete failure would be the result. We hear a great deal said about unprofitable farming. May it not partly arise from carrying on a particular branch in an unfavorable locality, in repugnance to one's natural "tastes and instincts?" I would not have every farmer engage in only one branch of farming and no other. A mixed husbandry is absolutely necessary; but still, there is a main reliance which every farmer has to depend upon to secure for himself and family the comforts and conveniences of life. Let him choose the most favorable situation to develop those products which are the most essential to his success, and which he is peculiarly fitted to raise.

The subject is prolific of suggestion. I have endeavored to present sone hints which may be of practical benefit to those about choosing a farm.—*Boston Cultivator.*

THEORY AND PRACTICE OF ESPALIERS.

BY PROFESSOR LINDLEY.

THE espalier mode of training fruit trees is one of the oldest employed in this country, and although still adopted, notwithstanding the introduction of various new modes, would certainly have continued to be more general, had it not received a bad character, which, as we shall endeavor to prove, it does not deserve. Men say that trees grown as espaliers are in many instances unproductive; that they produce nothing but wood; that by so doing they exhaust themselves, the branches becoming naked and dying off, without, perhaps, having borne any fruit during the whole period of their existence. These are the usual reasons, therefore, for athoritatively pronouncing the espalier mode of training a bad one. True enough, the bad condition of espalier trees cannot be exaggerated in some cases; but where is the fault? We protest against its being assignable to the system of training; the competency of the manager ought to be first inquired into.

Whatever may have been alleged against espalier training, nobody can deny that it possesses some important advantages if properly conducted; and it requires no very great horticultural practice to see that its ascribed demerits are owing to gross mismanagement, arising from ignorance of the operations of a few simple laws of vegetation, which are so obvious indeed that it is a matter of astonishment that they are not more generally known.

Espalier training is performed in perpendicular and horizontal lines; hence, trees that are trained in this manner are very suitable for gardens where straight lines are prevalent. They harmonize with walls, and adjacent straight lines of walks. They

occupy little ground, for with the exception of wall trees, they have less base than trees having an equal extent of branches managed in any other way; a mere strip, eight or nine inches wide, is sufficient for them, having the rest of the ground free to be cropped with vegetables. Yet, although occupying so little ground, the leaves have abundance of light and air; and the operation of training is so simple that any laborer can perform it without risk of erring, for he has only to fix the central leader in an upright position, and the lateral branches in a horizontal one. In all these respects the espalier mode of training is superior to any other.

Pruning so as to obtain horizontal branches at equal distances apart ought to be better understood than it is. A few words on the subject may therefore not be unacceptable.

The distance between the horizontal tiers should be from nine to twelve inches, according to the nature of the soil. Let a maiden tree be cut back, after planting in autumn, to twelve inches from the ground, or as near that as three eligible buds can be found; one of the buds—the uppermost—will push and furnish a fresh upright leader, and from the bud on each side the first pair of horizontal branches will be obtained. The points from which these spring from the upright will be less than a foot from the ground, but the branches should be allowed to incline upwards till they reach the horizontal line a foot high. Here it may be observed that, supposing the branches are to be a foot apart, the first three tiers should originate a little below the respective horizontal lines at one, two or three feet from the ground; for the lower branches are most liable to be weak, and by allowing them to start according to their natural inclination for some distance, before constraining them to the horizontal position, they grow stronger than they otherwise would do; on the other hand, as the upper tiers of branches are apt to grow too strongly, they should be brought out horizontally direct from the stem. A tendency to equalize the vigor of the branches is thus obtained, which could not be so readily effected by any other means. Let us now suppose that by shortening the upright leader every year to three eligible buds for a fresh leader and two horizontals, the tree is formed to the intended hight, and that it consists of, say six tiers of horizontals. A central upright shoot will, of course, be no longer required. The tree will have been six years planted; its side branches may have been allowed to extend on either side, and been subjected to the usual summer and winter pruning; yet perhaps no fruit has been produced. The tree is, however, but young; therefore we shall leave it for the present, and advert to one that has been similarly managed, for say twelve years. The oldest horizontal branches of this tree, *i. e.*, those constituting the first tier, are twelve years old; the upper ones being only six. Now, one would naturally expect the oldest to be the thickest; but, in nine cases out of ten, nay, we might venture to say ninety-nine out of one hundred, it will be found that the reverse is the fact, and that the upper or youngest tier of horizontals are of greater circumference, and far more vigorous than the lower or oldest branches. This shows that the sap has not been equally distributed among the branches; for if it had, they would have exhibited an equality of growth in proportion to their respective ages. An equal distribution of the sap

can only be the result of skillful management. Where the distribution, as proved by the dimensions of the branches, has been unequal, it is a sure indication that a proper system has not been followed; the trees consequently bear irregularly, or not at all; but the fault is ascribed to the system of espalier training itself, instead of mismanagement.

All who have had the charge of fruit trees, must have observed that the sap has a strong tendency to flow with greatest force into the upper parts of the tree, and into the buds that point upwards. The consequence is, that the highest buds, and especially those on the upper sides of the branches, push much stronger than those that are situated on the lower branches. It was formerly the opinion that where overluxuriant shoots appeared, there was a superabundance of sap, and that the best way of exhausting it was to let these shoots grow and even to encourage their growth. Hence the cause of many trees being too strong in some parts and too weak in others; for it is a mistake to suppose that luxuriant shoots will exhaust the flow of sap towards them. On the contrary, the more they grow the greater will be the supply; branches thicken in proportion to the quantity of healthy foliage which they bear. If a branch, therefore, has a number of vigorous shoots and ample foliage, a thick layer of young wood will be deposited in the course of the growing season. But on the contrary, a branch that is furnished with weak shoots and scanty foliage will acquire a comparatively thin layer of young wood; and if measured in autumn, its increase in thickness will be found to have been very little. But the disparity in the present season's growth between branches that are furnished with much foliage and those that have but few leaves will become still greater in the next, for the thick layer of young wood contains many more channels for the ascent of sap than the thin, and it is chiefly through the young wood that the sap rises. The strong branch has therefore established for itself the means of becoming still more strong. To illustrate our case better, however, let us take the upper tier of branches of an espalier tree. All, or nearly all of the buds on the upper sides of these branches push vigorous shoots. Allow them to grow without check during the first summer. They may be cut back to three or four inches in autumn; in the following spring the buds left will mostly push strong shoots, which will take an upright direction, and will appear like a hedge all along the upper branches of the espalier. Some of the strongest of these upright shoots, if not interfered with, would actually form stems; still however, the two horizontal branches from which they sprung will increase in proportion to the quality of foliage produced on themselves and on all the vigorous uprights in connection with them; and in a few years they would increase to a greater extent than all other branches of the espalier put together; for the sap would not readily flow into the lower horizontals when it had the means of ascending into the upper ones; and it is this evil which has to be watched and checked by skillful pruning.

* A ligature will not prevent the sap from rising to the upper buds, although by that means the elaborated sap from the leaves may be prevented from returning to the roots.

From what has been stated it will be evident that the growth of any part depends on the quantity of foliage in connection with it. We can therefore regulate the growth of the respective branches if we can that of the foliage. To this attention must accordingly be directed, in order that an equal distribution of sap may be effected, or there will be little fruit.

When the tree has pushed shoots several inches in length in the early part of summer, let the points of the most forward on the upper branches be pinched off, and throughout the whole season let all shoots on these branches be kept in check, so that there may be no more leaves connected with them than there are on the lower branches. If the later are weak, permit shoots to grow on them with little check or shortening. We shall not trouble the operator with such niceties as stopping the shoots invariably at this or that particular joint; all we ask at present is to *maintain an equal amount of foliage on the respective branches.* If there is already a superabundance on any branch, let such be reduced by thinning out the shoots which bear it; if the shortened shoots have several leaves on them, let them be still further shortened. On the contrary, where branches are weak let shoots grow upon them, and encourage as much foliage as can be well exposed to light. The same principle must be acted upon as regards trees that have been badly managed. These cannot be recovered in one season; but by pursuing the plan we have endeavored to explain, great improvement will doubtless take place.

It will thus be seen that the fault of espaliers not being productive does not belong to that mode of training; but to mismanagement.—*Michigan Farmer.*

A FEW WORDS ON MILDEW.

Editor Culturist:—This terrible enemy to vegetation, whether it fixes its blighting, deadening breath on the fruit and foliage of the grape vine, the pear, the peach, the apple, the rose or the chrysanthemum, insinuating its roots, through the pores of the epidermis, robbing the plant of its invigorating juices, and interrupting its free respiration, depriving the fruits of the vineyard and the orchard of their rich, luscious flavor, and of their regular size, shape and beauty, causing many a beautiful flower to droop its head in sorrow, giving to many a favorite tree, vine, plant and flower an aspect of weeping in sackcloth and ashes, creates feelings of sympathy, pity and sorrow in the mind of the beholder.

I had written thus far, Mr. Editor, when the *California Farmer*, of Nov. 16, came to hand, and I found on its first page an article on this very subject, purporting to be an essay read at a meeting of the Progressive Gardeners' Society, in Philadelphia. The writer's views—as you will see by comparison—agree, to a certain extent, with my own, and as I do not wish to indulge in plagiarism, I will attempt to review, in a limited manner, the essay alluded to.

The writer presents four apparently distinct theories, or opinions, as to the cause of its origin, though he adopts neither of them himself, though he appears to "agree

with that which attributes mildew to a dry atmosphere;" now, if the cause, or origin, of this terrible pest cannot be fairly ascertained, we are liable to wander into all manner of uncertainty in endeavoring to find either a cure or a preventive. It can be easily ascertained by the aid of a microscope, that the *Uredorosæ Puninia rosa*, and *Cladasproium herbarum*, which so often affects our roses and chrysanthemums, and also the *Erysiphe Communis*, which commits such ravages on our sweet peas, our grape vines, and our peach and apple trees, all belong to the large family of Fungi, which infests our earth, more or less, from east to west and from pole to pole; and wherever the ground is left dormant for a long time, especially in a dry season, if a spit of the soil be turned up and broken, myriads of the seeds of this fungi may be discovered in all the crevices, adhering to the sides of the particles of earth thus exposed, and these seeds are so minute, and of so little specific gravity, that they float off in every breath of air, like the winged seed of the thistle—only not so plain to be seen—until they drop again to the earth, or on the fruit or foliage of some tree, vine or plants, where it settles itself, "right side up," taking refuge in some small fissure, or fracture in the epidermis, from which sap exudes, caused by an uncongenial state of the atmosphere; there it quickly germinates, sending out its minute rootlets in every direction, robbing the plant of its invigorating juices, marring its beauty, and destroying its fruitfulness, and propagating its own poisonous species, both by seeds and offsets, and preparing them to follow its own destructive career.

There is no doubt but that the fungi are all parasitical in their habits; and although they grow on, and in the ground, especially where the ground is hard and cold, yet flourish most, and spread themselves into greatest luxuriance, when drawing their sustenance from the essential juices of some other unfortunate plant. The horrible ravages they committed among the grape vines, the peach trees, the apple trees, and on a great number of forest trees, the past season, give ample testimony of their destructive character.

But I will not say more, at present, as it would make this article too long; but if agreeable, will resume it again. Yours truly,

HORTICOLA.

FATTENING HOGS.—The method often practiced by large farmers, of turning fattening hogs into the fields of standing corn, if properly conducted, has its advantages over that of gathering the corn and feeding it dry to the hogs in the pen. The earlier in the season the process of fattening swine is begun, the better, after the grain has reached a certain period of maturity, whether it be rye, oats or corn; because all farm animals, and hogs in particular, will fatten much faster in warm than in cold weather. And the grain between the periods of its doughy state and full maturity, or before it becomes dry, is more easily digested and assimilated and converted into flesh and fat, than when it has passed into its dry state. It is clear, then, that the sooner the hogs are turned into the field after the corn is formed, and while in milk, the more speedily they will fatten; for if the weather be dry, the corn hardens rapidly.

HOP CULTURE.

A CORRESPONDENT desires information about hop growing—the best mode of culture, the best soil and exposure for the yard, and the mode of curing the hops for market. In addition to what we may say on the subject, we give the following extracts from a circular issued by J. R. Ray, of the seed and nursery warehouse, No. 106 J street, Sacramento. It will be found interesting to those about to engage in hop culture.

"Allow me to call your attention to the cultivation of the hop as a lucrative branch of horticulture.

"Our own, and the numerous experiments of others, many of whom have purchased roots from us, fully establish the peculiar adaptedness of our soil and climate to its growth; and our brewers, by paying fifty per cent. more for them than for the best brought around Cape Horn, fully establish their superior character.

"Since we have numerous inquiries, often by those who know but little of the hop plant, we have thought it best to publish this circular, appending some brief remarks respecting its character and mode of cultivation.

"*Character of the Hop.*—The root of the hop is perennial, continuing to throw out its annual vine, and produce its flowers abundantly, for twenty or more years. In common with a small class, it has its stamens and pistils on different plants. The hop of commerce is the flower of the pistilate or female plant; the office of the male or staminate flower, being merely to impregnate the female flower by its fecundating dust, or pollen, causing it to mature, seed and perhaps, in a slight degree, contributing to the development of the flower; hence, but few male plants are wanted in a hop yard—one hill to one hundred of the female plants being sufficient.

"*Propagation.*—Plants may be obtained from seeds, but they cannot be set out till they have been proved; for like apples, or many other fruits, they are seldom like their parent, and at least one-half will be males; while of the females, probably not one in fifty will be worth saving. The proper way to propagate, is by the employment of cuttings from old and well tested bearing roots. These are dropped in hills, six feet apart each way, and covered to the depth of five inches. Twelve hundred roots will plant an acre, if one cutting only be planted in a hill, and this is enough, if they strike well. They may be planted from January to March, or even April, but January and February, where it is practicable, are the best months for planting. It is often the case that a hop yard in this country will produce a small crop the first season, and if the plants promise well, it may be best to set poles and allow them to run. The poles should be eighteen to twenty-four feet in height, and strong enough to resist the force of the wind, when loaded with vines.

"To show how soon we may expect some returns from a hop yard, and also the certainty that roots will strike and produce good plants, allow me to make some extracts from letters addressed me from a gentleman in the northern part of our state. He says:

"'The hop roots that I bought of you last February have far exceeded my expecta-

tions. The roots I set the twentieth of February, and knowing that in other states they did not think of setting poles the first year, I neglected them until late; but they grew so fast that I set about one thousand poles, and for a sample, I refer you to a pole I sent to the fair at Sacramento. From all the roots that I got, (ten thousand) I do not think there were more than fifty that did not produce a strong, healthy hill.'

"Another letter from the same gentleman states, that from this new yard, planted last February, he shall gather one thousand pounds of hops.

"*After Cultivation* consists in keeping free from weeds, pruning the roots from runners that serve to dissipate the force of the main root in suckering, and directing the vines to find the pole, around which they will strongly twine, when once started.

"*Gathering.*—The hop matures in our climate in September. When it is ripe enough to pick, the color has slightly changed to a lighter shade, and the seed has become hard and firm.

"Picking should be pursued with as much dispatch as possible, and it is best conducted by removing the pole carefully from the ground, after cutting off the vines near the surface. The hops may then be picked, the vines stripped or cut off, and the poles returned to their former position, for future use.

"*Curing* consists in merely drying, and may be effected by spreading in the shade, having a care that the pollen be not dissipated or lost. But a far more expeditious and cheaper plan, if the quantity be considerable, is to employ a kiln made of brick or stone, even wood might answer. A good size for the kiln is twelve feet square at top, two feet at bottom, and eight high; across the top are laid slats for the support of cloth, on which the green hops are placed. The heat is applied from a furnace of charcoal placed at the bottom. In a kiln of this size, fifty pounds may be dried at a time.

"Any information relative to preparing hops for the market so as to suit consumers, will cheerfully be given. Yours truly,

"J. R. Ray."

We will say a few words touching our own experience in the culture of hops. The best soil we ever found for the hop, is river alluvium, sufficiently moist, during the summer, without irrigation. In many places in the Western states, the hop is found growing wild; but we believe invariably along the banks of rivers, never upon high lands; and yet, when cultivated, will do well on any description of rich, sandy loam, or garden soil. Poles, if used for the hops to run upon, should never be more than sixteen feet above the surface of the ground; if higher than this, they induce the hop to run too much to vine. We believe a twelve-foot pole better than one higher; for upon such a pole, the vines will run to the top and above, two feet or more, drop back, seize hold again, and again run up. These bendings or distortions of the vines check the vine growth, but greatly promote the production of flowers.

Quite recently, trellises, to take the place of poles in hop growing, have been introduced, and with success. At the present time, the proprietor of Oak Knoll is introducing a new feature: it is to make his division fences where animals are not allowed

to run, so many trellises for supporting the hop, planting the vines on one or both sides, and cultivating properly. Nor can we see any good reason why he may not be reasonably successful. Grape vines will succeed, because they do, in such situations, upon all manner of division fences, not exposed to animals; then why not the hop? And as the business of grain growing seems to be so much overdone from year to year, it will be well for more of our farmers to turn their thoughts to the culture of a greater variety of field crops.

RAISING CALVES.

"WHAT are you going to do now?" asked farmer Jones, one morning as he stood looking over my fence.

"Oh," I replied, "I am trying an experiment that I saw recommended in the CULTURIST, some time since. I believe it is a good plan, and mean to try it, at any rate."

"What is that—to rear them on skimmed milk?"

"Partly," said I, "but I do not intend to keep them entirely on that."

"That is always the way with you city folks, when you go to farming; you always adopt every new notion."

"But, neighbor Jones, I lack experience, and must gain my information from every means in my power; what my reason approves, I must adopt; and then, as you know, my capital is limited, and if I can keep up my dairy business, and raise my calves, I think I shall do well."

"Well, have it your own way; but I would like to compare my calves with yours, at the end of the year." So saying, my neighbor left me.

I had carefully read the article referred to, and being, as my neighbor said, a new hand at the business, I thought I could do no better than to carry out my original intentions, although a little discouraged.

I had a small lot of land near the barn yard, which I thought would be a good place for my calves to run in, as a small stream of water ran through it, and there was good green feed in the pasture. I prepared a snug pen, which opened in the lot, and was careful to drive them in every night; every night and morning I gave them each two or three quarts of warmed, skimmed milk, into which I had stirred sufficient middlings to make the whole about the thickness of cream. When I had plenty of milk, I gave them some at noon. One thing I will mention: I tried to teach them to drink by putting my fingers into the pail; but finding they were inclined to bite them, I introduced a corn cob, which I found answered every purpose. The calves soon learned to drink freely, and I continued the treatment until they were six months old, and I think I had reason to be pleased with the result. All this time we were making butter; while I was well aware that my neighbors could not get milk enough to use for household purposes, to say nothing of butter making. At the end of six months, I turned my calves into a fine pasture to look out for themselves, as there were a num-

ber of young ones to look after; but by this time they were so tame, that every time I went among them to salt them, they would follow me, and seemed anxious to express their pleasure at sight of a friend.

A few weeks ago, farmer Jones happened to ride round by my pasture, and noticed my young stock, for the first time in a good many months.

"Ah!" said he to me, "have you been buying new stock?"

"No," I replied, a little surprised at his question; "this is of our own raising."

"Indeed! why, how fine they look; I did not think you had any so old as these."

"Why, neighbor Jones, all you see here are those we raised by feeding; they will compare favorably with your own, I think."

"Yes, indeed," answered my friend—for he was a frank, honest spoken person—I think they will, and you have one great advantage over me, for mine are as wild as they can well be, and will give me trouble enough to break them in, and I really think, after this, I shall try the plan myself." So saying, he rode off, and I returned home to give you the benefit of my experiment.

READER.

SUMMER AND WINTER PRUNING FRUIT TREES.

A WRITER for the Rural American, some time since, expressed himself in favor of summer pruning. He says: "If you prune in winter, and before the leaves are fairly out in the spring, your trees will throw out innumerable suckers to compensate for the limbs that have been pruned away. The stump of the limb becomes dried and cracked, and will take as long again to heal over as one of the same size on the same tree, cut in June or July." With the above I do not fully agree, but most cordially concur in the following:—"When you trim, whether in summer or winter, for conscience' sake, leave your ax on the wood pile. There is nothing that starts my 'dander' sooner than to see a man cutting and slashing his trees with an ax, unless it is to see a miserable loafer, man or boy, killing insectiferous birds."

Another writer on the same subject says: "It is a pretty well established fact that apple trees—and we will add pear trees—pruned from the middle of July to the middle of August, [from the middle of June to the middle of July would be better] sustain the operation with much better advantage, than if pruned at any other season of the year. If pruned at this time, the wound will heal over and make a handsome stump. If the branches be lopped in winter or spring, the stump leaves generally a perpetual scar, and if after the sap has commenced flowing, a bare bone, as it were, projecting from the living parts of the tree, and remaining there until it rots away, when frequently the decay continues, as a sort of gangrene, into the very heart of the tree, much to its injury."

Summer and winter pruning, like the "tap root" question, is still a mooted one. I agree with neither of the above writers in whole, but with both in part. It depends

upon the size of the limb whether it heals over the first season, and much more, the point of dissection. For an old orchard, I should prefer winter pruning, when the tree is bare of leaves, and the operator can more readily see when a dead limb needs to be removed and live ones thinned out. If he wishes to prevent the "stump" from cracking, he can cover the wound with a coat of coal tar, or cheap paint. A limb, an inch through or more, will not heal over in a season, whether cut in January or June. But the point of severance is of consequence, whether the limb be large or small, and whether cut out in winter or summer. And this point is at the base of the limb, where it retains its natural size; at the outer edge of the axle or enlargement at the base of the limb—just between "wind and water." If the limb is cut off outside of this, a dry "stump" is the consequence; if cut too close to the main stem, a larger wound is inflicted, and the healing-over process impaired and retarded. Whether the operation be performed with knife or saw or chisel, (the only implements suited to the work) they should be of good material and in good order, and the *cut* be made clear and smooth. In cutting out large limbs where there is danger of splitting down, or of stripping the bark, when performed in summer, the cut should be made from the under side, half way through, and the limb supported while cutting from the opposite side. In removing very large limbs, it is safe to sever them twice, the first time a foot or so from the body, and then at the point desired.

But the above suggestions are applicable to old established and neglected orchards or fruit trees. No large limbs (except dead ones) would need removal, with the attendant evil of dry stumps and gangrene, in a tree that had been properly *trained.* The old moral, generally applied to the "rising generation," is quite as appropriate to the subject from which the figure of speech is derived, and just suited to the young fruit growing interest of this state. In some suggestions in the May number of the CULTURIST, on the subject of *Irrigation*, and as a remedy for "trees too much drawn up in straight perpendicular shoots, forming but an imperfect head, or succession of heads, at wide distances apart, beyond the power of the pruning knife to remedy," etc., I thought the difficulty might be obviated or lessened, by lessening the amount of stimulants in the shape of manure and water. Subsequent reflection led me to the opinion that the "pinching in" system would be the better remedy, and a remark of yours in the number following, tended to strengthen my conclusions; consequently, having a small lot of trees to superintend, apples and pears, I applied the "French system" rigidly, and with success. The pear trees were one year from the bud—mere *whips*, some four feet high. They were cut back to fifteen inches, the leading shoots regularly pinched in during summer, and they have now fine pyramidal formed heads. The apple trees were two years old; these were properly cut in at planting, and subsequently treated in the same manner as the pear. They have become fine stocky trees for their age, with desirable branching heads, needing but little use of the pruning knife now, or showing a tendency to require it extensively hereafter. *En passant*, if I were to engage in fruit culture, or recommend to others about to engage in that business, I should select trees of the respective ages above named. It would be to the advantage of all parties, and especially to the orchardist. He

could obtain his stock at much less expense, to the advantage of the nurseryman, and have a better, and better trained, orchard in a given period of time.

GOLD HILL, Placer county, Nov., 1860. T. A. S.

PLANTING ORCHARDS.

WE extract the following beautiful appeal from one of our exchanges, and would gladly encourage a taste for the *beautiful* and the *useful*, and in no way can so much be effected as by extending the cultivation of fruit of every description. It adds to the comforts and endearments of home, and exerts a wholesome moral and physical influence upon the young; at the same time, by beautifying the homestead, a charm is added to rural life, which will grow up and mould the man in after life for good.

"Who plants fruit trees, makes a permanent investment, that may be expected to increase from year to year, until their original value is hundred-folded. Who plants fruit trees, makes a prudent provision against life's rainy days, against loss of health, misfortune in business—old age. Who plants a tree, extracts something of bitterness from the original curse. It was a part of Adam's punishment to be expelled from the society of cultivated trees; to surround oneself with them, is to take some steps towards regaining the Paradise that was lost to man by his first transgression. The planted fruit tree will be a faithful minister to its owner's profit, improvement, health and happiness. It will stand sentinel over his dwelling through winters of adversity, when summer friends have fled. While its master is sleeping, the tree will be growing. While he is traveling, the tree will stay at home, and keep on growing. It will be industrious for him through all seasons, converting air, and earth, and water into shadow for his footsteps, perfume for his parlor, food for his table, fuel for his hearth, timber for his use. It will serve him contentedly through life, and minister to his wants when its life is ended. A tree has moral and social uses. It is an orthodox, wholesome preacher. It will discourse daily homilies on faith, hope, patience, and good will to men, with a gentle eloquence that steals into the heart, making it more roomy and open, and filling all its chambers with sunshine. A tree sets an example of self-denying benevolence. It embroiders its foliage, and ripens its fruit by tedious processes; then gives them all away, dropping its last leaf to keep warm the tender plant that has taken root in its shade. The poet Virgil discovers a close relation between generous character and generous fruit trees; his native land he celebrates as a 'mighty parent of fruit, mighty parent of heroes.' Children should have a double share of depravity, not to be made better by the kindly influences that distil about them, when they are brought up in the companionship of grand and chivalrous trees. Would a man rear a monument to his memory more to be coveted than one of costliest marble, let him plant trees; they will sing his praise in measures sweeter than a poet's, when no envious lips are there to detract."

BEE PASTURAGE.

EDITOR CULTURIST:—I have seen several articles of late on the subject of bee pasturage in California, none of which fully correspond with my observations.

I have made the raising of bees and honey my exclusive business for the past three years. During this time I have traveled over most of this state, and have studied as closely as I have been able, the climates, seasons, and pasturage for bees, in the different parts of the country. I think it would be difficult to find another country so well adapted to the production of honey as California.

The season for gathering honey in all parts of the state, begins within four or six weeks after the first heavy rains. It varies from the first of January to the first of February.

The willow buds furnish the first pasturage; various wild flowers come next in order. During the last of February and first of March, the *Filaree*, which is very abundant over most of the state, and furnishes an abundant yield of honey for nearly three months, begins to bloom. In April ten or twelve varieties of clover come; blackberry blossoms add something. Along the Sierras, from Oregon to Mexico, immense quantities of flowering shrubs abound, such as manzanita, matheone, buck-eye, wild plums, cherries, currants, gooseberries, etc., and such is their fragrance in many places, during February, March, April and May, that one finds it difficult to believe that he is not in an Indian orange grove. All these blossoms are rich in honey. From the beginning of the season to the first or middle of May, the coast and interior counties are equally fertile in the production of honey. About the first of May, the interior counties begin to fail; the flowers on the high lands are gone—the waters rise in the rivers, and the low lands are overflowed. For about six weeks there is but little for bees to obtain; about the first of July the waters begin to fall, the cephalanthus begins to bloom, followed by many other wild flowers that are rich in honey, and remain until late in the fall. About the first of August the honey dew begins, and continues until the fall rains wash it away.

Bees that are kept in the interior counties during the six weeks of short pasturage above mentioned, it would pay to feed during that time. But the pasturage does not fail in the coast counties at that time, viz: the first of May, but on the contrary, the best of the season there is during those same six weeks. That is the mustard season, and such is the extent and richness of those vast fields, that millions of swarms might work them without overstocking them. The quality of honey made from mustard is No. 1. The season begins to fail in the coast counties about the first of July, the very time when the second season begins in the interior counties. From this it will be seen that if bees are removed from the interior to the coast counties, about the first of January, and kept there until the first of July, and then returned to the interior, they may be kept at lively work for nine or ten months of the year, and the amount of honey that can be produced in this way is almost incredible.

The conveniences for these changes are ample. The coast counties above alluded to, are those bordering on the bay, ten or twelve in number; the interior counties

are those adjacent to the rivers that empty into the bay. There is room enough for the profitable employment of a thousand men, and a million swarms of bees. "But," says one, "the market would be over-stocked with honey." Let it be over-stocked then, and we will ship it to the East, as we do wheat and barley. If we can afford to ship wheat to New York, which is only worth two and a half cents per pound in that market, may we not ship honey, which is worth twenty-five cents per pound?—The plan above proposed is no idle dream—no mere castle in the air, I have practiced it for the last two seasons with immense profit. During the past season, thirty-five swarms have made me over twenty thousand pounds of honey. California is rich in her sources of wealth. The half has never been told.

Yours truly, HIRAM HAMILTON.

STOCKTON, Dec. 17, 1860.

GARDENING FOR WOMEN.

THERE is nothing better for wives and daughters, physically, than to have the care of a garden—a flower pot, if nothing more. What is pleasanter than to spend a portion of every passing day in working among plants and watching the growth of shrubs, and trees, and plants, and to observe the opening of flowers, from week to week as the season advances? Then how much it adds to the enjoyment to know that your own hands have planted and tilled them, and have pruned and trained them—this is a pleasure that requires neither great riches nor profound knowledge. The humble cottage of the laboring poor, not less than their grounds, may be adorned with pet plants, which in due time will become redolent of rich perfume, not less than radiant with beauty; thus ministering to the love of the beautiful in nature.

The wife or daughter that loves home and would seek ever to make it the best place for husband and brother, is willing to forego some gossipping morning calls, for the sake of having leisure for the cultivation of plants, and shrubs, and flowers. The good housewife is early among her plants and flowers, as is the husband at his place of business. They are both utilitarians, the one it may be in the abstract, and the other in the concrete, each as essential to the enjoyment of the other, as are the real and the ideal in human life. The lowest utilitarianism would labor only for the meat that perisheth. Those of higher and more noble views, would labor with no less assiduity for the substantial things of life, but would in addition seek also those things which elevate and refine the mind and exalt the soul.

The advantages which woman personally derives from stirring the soil and snuffing the morning air, are freshness and beauty of cheek and brightness of eye, cheerfulness of temper, vigor of mind, and purity of heart. Consequently she is more cheerful and lovely as a daughter, more dignified and womanly as a sister, and more attractive and confiding as a wife.

Hence the fruits and products of garden culture, as they relate to woman, when

viewed objectively, are but small, relatively, as compared with the benefits secured in regard to herself as the center of social refinement and enjoyment, amid such a world as ours. A husband who revolves round such a center cannot but be a good neighbor, a useful citizen, a kind father, a loving and confiding companion. Do not, then, mothers and sisters, the latter wives in prospect, neglect the garden.—*Wisconsin Farmer.*

A WORD TO THE LADIES.

"OH, dear! I wish I had a sewing machine, I do not think I should have to sit up when everybody was in bed."

This was what I heard the wife of a neighboring farmer say; and I asked her "why she did not get one?"

"The reason is, my neighbor, I cannot spare seventy-five, or a hundred dollars," she answered.

"But you can get one for less than that, which will answer for all ordinary uses"; and thinking that many other women might enjoy the comfort of this blessed aid to over-tasked fingers, I feel it a duty to tell them, as I told her, of the machine we use in our family; for as yet, it is not largely advertised, and may not be known in many places where the CULTURIST pays its welcome visits. It is called the Williams and Orvis Machine—can be purchased at San Francisco, for forty-five dollars, and sent to any part of the state, by paying the freight. We find it very simple in the arrangement of all its parts, and very easy to understand. It should only be known, I think, to be appreciated; and as this is simply a voluntary piece of information, made for the benefit of your readers, I think you will take pleasure in giving it space. I should, perhaps, add that it is a two thread machine, and both the spools are just as you purchase them, without the trouble of rewinding them. The seam is very fine and elastic, and as the needle is straight, is not easily broken. We have only broken one in all the time we have used it, and only had the directions sent by the maker, to learn the use of the machine. We had never even seen one of them, and only purchased it on the recommendation of a friend who had used one nearly a year, and liked it much.

C.

SALT FOR FENCE POSTS.—A correspondent of the New York Journal of Agriculture set some white oak posts, about twelve inches square, thirty years ago, and on examining them the other day, he found them all sound. After setting, he bored into each post, about three inches above the ground, with a two-inch augur, at an angle of about forty-five degrees, and filled the hole with salt and plugged it up. It took about half a pint of salt to each post. The plugs are yet in, and the posts look as sound as when set.

NEW ENTERPRISE.

THE dawning of that art of the liquefaction of quartz, will be the means of opening a new field for the development of California resources, and one of our well known merchants has in contemplation the shipment of quartz for the purpose of testing its practicability. We call particular attention to this discovery. We copy from the New Orleans Picayune. It is from the pen of their New York correspondent, "Walter Clyde."

A certain Dr. Benjamin Hardinge, a man of original mind, a careful, truthful and never-tiring student of nature, has spent the last fifteen years in his laboratory in liquidizing quartz rock and combining it again in new and varied forms. Dissolving quartz, or silex, with an excess of alkali, is nothing new in chemistry; but to do it with the silex very greatly in excess over the alkali, in large quantities and at small expense, has been one of the greatest studies of chemistry for the last quarter of a century. This Dr. Hardinge has accomplished, for I have seen three thousand gallons of this liquid dissolved at one time, in the short space of two hours, at an expense merely nominal. The capacity of this monster machine is six thousand gallons, and it can digest twelve tons of quartz oize or flint rock in twenty-fours, and convert it into the waters of crystalization. Here, then, you have the basis for the wildest speculations. Your readers, are, perhaps aware, that a very large portion of our globe is of just this material, either in the form of sand, rock, or other silicious substances. By chemical combinations, Dr. Hardinge makes an article of plastic marble, purer than the purest Parian. It can be made of any color, by mixtures with various metallic oxids. Every article of marble work may be thus cast as perfectly as castings of metal now are, and copies of Corinthian pillars, statues, mantels, etc., can be furnished at a cost of one per cent. of their present cost. By a proper combination with ordinary sand or marble, a stone is made harder than the hardest flint, and at a price far less than the cheapest brick. Your parlors may be frescoed in marble and time will never injure the colors. This is, undoubtedly, the same process used in the catacombs of Egypt, the colors of which are as fresh as when they were first put on, three thousand years ago.

Your levees may now be built of stone, made on the premises, and you will have no trouble to make them equal in size to the foundation stones of Solomon's temple.

This liquid quartz is also made into paint, incombustible and insoluble. Your ships and steamboats can never burn up, and the meanest hut will be as safe from fire as the marble palace. This seems almost like a story of the Arabian Nights, yet it cannot be otherwise than true.

For dissolving gold-bearing quartz, this invention's value is without limit. Every atom of gold may be precipitated and saved, and then the liquid is of far more value than the whole thing has cost. Think of one great iron stomach digesting twelve tons of flint in twenty-four hours!—*Central Californian.*

We think we hear, to some extent, the buz of a "humbug" in the above.—Ed.

Editor's Repository.

Shall the Culturist be Discontinued?—As sole Editor and Proprietor of the Culturist, in the November number, I made a very direct and earnest appeal to my patrons, calling on those who had not remittted their dues for the current volume, *to remit without further delay.* I said, upon the result of this appeal for the payment of my just dues, will depend that improvement which I have in contemplation with the commencement of the new year; an improvement that will be both ornamental and creditable to the magazine and acceptable to its patrons.

Nine hundred and thirty-four persons in California who continue to take the Culturist from their respective post offices, neglect to remit their dues. To such we say, you have now received six numbers, or one half the current volume. Continuing to take it from your post office, is pretty good evidence that you are pleased with it. You are certainly willing to pay for what you have received. I ask nothing more; I do not ask for a year's subscription; but only for two dollars, in payment for the half volume. I believe every man intends to, and would pay me before the close of the volume, on first of June next; but that does not enable me to pay immediate, paper and printer's bills, and I cannot command sufficient capital to enable me to go on unless my dues are paid me. Therefore I say now, with even more of earnestness than before, that upon the result of *this appeal* for the payment of two dollars, the amount now due me from so many, will depend, not only certain contemplated improvements, but the actual continuance of the publication. It is on this account that I desire those in arrears to send only two dollars; but state distinctly, whether they wish to remain subscribers in case its publication is continued. Address letters and remittances to Editor Culturist, San Francisco.

What we hope for.—We hope that nine hundred of our present subscribers, our patrons, friends of progress and agricultural improvement throughout California, will write us just such a letter as the following—or the same in spirit—that it may reach us before the first day of January, 1861, that we too, in that season of rejoicing, may rejoice with you; for we wish you all and everybody nothing worse or less than a *merry* Christmas and a *happy* New Year.

Editor Cal. Culturist: Dear Sir—Inclosed please find four dollars, being the amount of my subscription for the Culturist, the present volume. I send direct to you through the mail, as you request in your excellent publication. I may add, that I hope the patrons of the Culturist will come nobly up, and support a publication which is contributing so much to the interests of horticulture on this coast. For myself, I find not a few suggestions in it relating to the cultivation of the grape, which I value highly.

Yours, very respectfully, D. C. FEELEY.

San Jose, Dec. 11, 1860.

FRONTISPIECE: COLEMAN'S IMPROVED QUARTZ MILL.—We regret that, after so long a delay with our present number, nearly three weeks beyond the usual day of publication, we should be obliged to appear with so modest an appearing frontispiece. The most provoking delay, on the part of our artist, in whose hands we have had a fine picture for weeks, slowly advancing towards completion, is our only apology for its non-appearance. If the one we present is unpretending in size and appearance, it is none the less useful and effective. It is declared by those who have given it a trial, and who have had long experience in quartz, as well as with a great variety of crushers and pulverizers, to fairly excel them all, when the small amount of power to drive it is fairly taken into account.

It is probably the most perfectly adapted to localities where water is not procurable, of any known quartz mill; a single Ericsson engine, of medium power, with a small quantity of fuel, being all that is required for its perfect performance. This mill was patented by Ezra Coleman, April 3d, 1860. It was exhibited at the late mechanics' and agricultural fairs in this city, and excited great interest among those engaged in quartz mining. It was awarded the first premium, and received the highest recommendations of the committee on quartz machinery. The agents—Biggs & Ruggles, of San Francisco—claim for it a decided improvement over any other mill in use, or ever offered to the public for reducing or grinding gold quartz, silver and copper ores, cement or other hard substances.

The mill, complete, weighs about nine hundred and fifty pounds, and can easily be taken apart, so that no one piece will exceed two hundred and ten pounds in weight, and is capable of crushing from three to five tons a day with three horse power.

The shifting grinding surfaces are so arranged that they can be changed or replaced by any one in a few minutes; are especially hardened for durability; are self-sharpening, and a much larger product is obtained than by any other known process.

The mills are made in the most perfect manner, by one of the oldest foundry companies in this city, and are now ready for delivery. The agents further say:

"We have been conversant with various kinds of quartz mills, and on a careful examination and test of this, have become so fully impressed with its superiority over all others now in use, that we have arranged to devote our attention to its exclusive sale, in the fullest confidence that it is *the mill*, and *the only one*, that can be relied upon to do the work required, at small expense and in a thorough manner. And such is our experience of its durability and economy of working, that we are ready to guarantee it to reduce hard substances cheaper than any other known process. It can be driven by steam, water, or horse power, and be put in operation in one hour after arriving at the desired location."

"Biggs & Ruggles, No. 146 Front street, are the agents for Coleman's patent quartz mill, which will grind to powder (or rather dust) five tons of quartz a day, with three horse power. This is, without doubt, the very best quartz crusher ever introduced into this state. Its working is noiseless, rapid and effectual. It is rightly termed the "poor man's mill." It can be bought for three hundred dollars, and can be worked by from one to three horse power. Mr. Coleman has hit the great desideratum at last—a cheap, portable, strong and rapid quartz crusher. Crowds are gathered about it constantly. We saw flint rock ground to flour, with noiseless celerity and without jarring motion. No one intending to buy quartz machinery should fail to examine this admirable invention."—*From the Alta California report of articles on exhibition at the Mechanics' Fair, San Francisco, Sept.* 12, 1860.

"Coleman's quartz mill, exhibited by Biggs & Ruggles, was put in operation for our observation. It readily reduces the quartz already broken into lumps of suitable size fed to it, to an impalpable powder, suited for amalgamation, by any plan deemed best by the quartz owner. It will grind up from three to four tons in twenty-four hours, and as it can be worked by horse,

mule, water or steam power, the miner can work more or less, according to the power and means at his command. They are divisable, and can be transported to any point by mules. They are furnished at three hundred dollars each."—*Morning Call, Sept.* 15, 1860.

Correspondents.—Our readers will find several original communications in the present number, that we are sure will interest them. As the present is the season of the year for those who intend to become apiarians, to make their purchases, we thought there could hardly be a more interesting subject for our leader, than one treating upon bees, and particularly upon the Italian bees recently introduced. We are under obligation to Mr. Charles Mock, for *two* valuable essays for the present number, with a promise of others for succeeding numbers. T. A. S. on summer and winter pruning, excellent.

"Up Country," appears once more, and will continue to, monthly, as long as the Culturist does. A paper from Rev. A. Hamilton on bees and their pasturage, will be read with interest; also, one by J. S. Harbison on the same subject. "Horticola" appears on the subject of Mildew, and will be heard from again. Part second, and by far the more practical part of an excellent essay on irrigation, by Wm. Thompson, is concluded in this number. "Reader" comes in with a few timely and admirable remarks on the rearing of calves; and lastly, though none the less interesting on that account, our regular and highly esteemed correspondent "C." [we wish we might give her name] gives us another of her pleasant "chats," and this time about sewing machines. By the by, does it not amount to a first rate advertisement for the Williams & Orvis machines? In fact, we have an array of talent, now engaged for our magazine, that we believe is worthy the confidence of our patrons.

New Advertisements.—We puff no man's advertisement, because we believe it to be of no earthly use. Everybody who reads the Culturist, reads or looks over the advertisements, because it is now generally understood that none but those that are in themselves interesting as reading matter, ever appear within its cover; and as to the one on the outside of cover, that is always supposed to possess peculiar interest, and is, of course, always read. Our advertising addenda contains, this month, several new and peculiar features, that can only be seen by turning to them, and appreciated by reading them.

Our Recent Excursion Inland.—We have never been so well convinced of the greatly diversified agricultural resources of California, as during our recent visit through portions of Sonoma, Napa, Solano and Contra Costa counties. We have long been satisfied that, for stock and grain growing, large districts of California are excelled by no other country. Bodega and the immediate coast county adjacent, has long since given its guarantee of an abundant, annual, unfailing crop of potatoes; the Russian river valley stands pledged for all the corn the country may need; barley and oats are a certain crop, from the lower valleys to the very summits of the foot-hills, skirting the coast range and Sierras; whilst the summers find our flocks and herds occupying the vast clover valleys that lie, as it were, land-locked among the higher ridges of the mountains. Our valleys and foot-hills are all wheat producing, in quantity and quality unsurpassed; whilst the grape here claims a home in a climate and a soil, the equal of which is elsewhere unknown.

Sonoma county is destined to lead the state in its wine product, perhaps for years to come. Gen. M. G. Vallejo and Col. Haraszthy are the pioneers in this great work, of introducing successfully the culture of the grape, and demonstrating the fitness of the soil of Sonoma valley for the production of superior wines. Their example has been and is now being followed, until

the acres there already devoted to vineyard culture, are counted by thousands. The success already attained, has had the effect to raise the value of all lands upon which the grape is found to thrive, till they actually bear, and yet are really worth, almost fabulous prices. This to us appears the more surprising, when, from our own personal acquaintance with the fact, we know that there are tens of thousands of acres lying all along the foot-hills of the Nevada range of mountains, skirting the great Sacramento valley on the east, every acre of which is equal to any in Sonoma valley for wine producing; and what is of still greater consequence to thousands of us, these acres can be had at merely nominal prices, and in very many instances for the mere taking possession of.

There are lands there whose soils are as red as brick dust, the debris of rocks, volcanic and otherwise, containing every element favorable for the production of superior wines; whilst the climate is even more genial for the perfection of the grape—if such be possible anywhere—than that of Sonoma valley. So well convinced are a few of our observing fruit growing men of our valleys, of this fact, that they already see in the future, and frankly admit, that their great rival competitors in fruit, and particularly grape growing, will soon be found along the base and among the foot-hills of the Sierra Nevada. If irrigation should be found necessary—and in very few cases it may—then the countless mining ditches, that now only waste their fertilizing burden in filling up the lower rivers, can be turned and made to thread every hill and valley with their net-work of waters.

Timber is plentiful, in many places, abundant; bee pasturage can be said to have hardly a limit, for the buckeye, and an almost infinite variety of wild flowers, with several varieties of chaparral bush, spread far and wide their blooming fragrance for months together. A few cows, and poultry almost without limit could be kept anywhere, by the new beginner or man of limited means, yielding him an ample support, for the three years preceding the first bearing of his vineyard; after which, his independence is established; to be followed by the profits of the fourth and fifth years, and every year thereafter, rolling in upon him like a great wave. We would like to say a great deal more upon the subject of vineyards, and diversified agricultural pursuits; but our space will not admit of it now.

Bound Volumes.—Between the twenty-sixth and thirty-first of the present month, (December) bound volumes of the Culturist will be ready for delivery to Chas. H. Cooley, volume two; S. W. Shaw, volume two; Wm. Zilhart, volume one; E. A. Tompkins, volume one; E. P. Howell, volumes one and two. Should there be others to whom bound volumes are due, they will please inform us, and the circumstances under which they claim them.

Setting Grape Cuttings.—Editor Culturist:—The season thus far has been such that I find it impossible to prepare the ground I had chosen for a vineyard in that thorough manner I had intended previous to setting the cuttings. The ground is too hard to plough, and the rains seem yet to be afar off. Can I dig with pick and spade a small portion of the ground where the cuttings are to be set, and plant them out, with fair hopes of success, giving the rest of the ground the proper preparation when the rains finally come? I am going to plant twenty acres to vines this season, although the whole business of vine growing is new to me. I am going to rely upon as perfect cultivation as I can possibly give my vines; but I am not fully convinced that I am right in selecting almost entirely, the Mission grape for wines, as I hear a great deal said about the value of foreign grapes over the old Mission variety, for wines.

I wish to grow grapes as well for the table as for wines; still, if I succeed in my vineyard culture as I hope to, the bulk of my crop will of course be made into wine. With this view

of the future of my vineyard, what two varieties of grapes, in addition to the Mission variety, would you recommend me to plant? My soil is gravelly, calcareous and hilly, but susceptible of culture with the plow, in no part steep enough to wash under the severest rains. By giving me your views on the foregoing, you will much oblige a novice in grape culture.

Amador County, Dec. 5th, 1860. S. S.

Our Answer.—We would not recommend the planting of cuttings in the manner you propose. It would be next to impossible for you to cultivate the larger portion of your ground, and fit it in that fine and perfect condition which it ought to be in for the reception of the cuttings, without material injury to the cuttings if previously set. Nor can we see the slightest gain or advantage in your proposed early setting of the same. They may as well be *heeled in*, in any good garden soil, or covered entirely in bulk, as to be set out now, or before the last of January. They would not make root if set out now, and the winter rains acting upon the soil surrounding the cuttings, would tend to pack it almost brick-like, and to an extent retard the striking of the fibrous roots in early spring.

Just now, December 15th, the rains are pouring, with every prospect of continuance. We would therefore recommend the putting of the whole ground in the most perfect order, before setting a single cutting.

In regard to the two best varieties for the table and for wine, in your locality, or in any other, it is impossible to determine without trial. Our preference, however, without trial, would be given to the Black Hamburg and Catawba. These are almost sure to succeed in any good soil under a proper climate, and both are hardy, vigorous growers and great bearers.

About Orchards.—Will some one of our readers point us to the country on this earth, where the orchard is not the most valuable part of the farm? We are aware that there was a time when in middle and western New York the mania for wheat growing exclusively so took possession of minds of the farmers there, that many persons in their furor cut down their orchards by acres and acres. But a change has come over them, and now we see, and they see their their great folly.

The orchard, notwithstanding the low price of fruit the present year, but particularly of apples, in most of the Atlantic states, is still the best investment for the number of its acres, to be found on either Eastern or Western farms; whilst the demand for fine fruit, is everywhere, and every year on the increase. And what is true of the Eastern states, will apply equally to California. If the orchard is not the most valuable portion of every farm in the State, why does not the owner cut it down; the expense of removing would be amply paid by the amount of firewood they would yield. But no, they all know better, and if we could "read them through," we would find them inclined to increase rather than diminish them. Now then is the time, for you who have neglected to beautify and render more valuable your homestead, to do it. We bring before you the names of some of the most reliable nurserymen in the state; you will find them and their advertisements in our addenda. Buy none but thrifty trees; have them guaranteed true to their labels; take two or three years old trees in preference to larger or older ones, even at the same price; and then set them out no deeper than they grew in the nursery; give them good cultivation, by keeping the ground free from weeds and the surface mellow and finely pulverized, and you will never regret the cost and labor bestowed. We say again, plant orchards, both for profit and pleasure, not forgetting a few acres of vines. Grapes are the surest fruit in the state, wherever the climate is congenial, as they are always produced upon the wood of the current year's growth.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending October 30th, 1860; Lat. 38°, 34′, 41″, N.; Long. 121°, 27′, 44″, W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea levcl. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By Thos. M. Logan, M. D.

OCTOBER, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	Month.	Average of eight yrs.
Barometer, Maxima	30.284	30.195	30.174	30.248 inches.	— 0.006 inch.
" Minima.....	29.769	29.771	29.785	29.769 "	+ 0.015 "
" Mean.....	30.010	29.983	29.977	29.990 "	— 0.031 "
Thermomcter, Maxima.....	65.00	78.00	72.00	78.00 deg.	— 5.37 deg.
" Minima.....	47.00	55.00	51.00	47.00 "	— 0.62 "
" Mean	55.32	64.10	59.87	59.76 "	— 2.48 "
Force of Vapor, Maxima.....	.433	.514	.559	.559 inches.	+ .030 inch.
" " Minima.....	.225	.284	.308	.225 "	+ .052 "
" " Mean	.340	.390	.386	.372 "	+ .017 "
Rclative Humidity, Maxima.....	87.00	88.00	88.00	88.00 pcr ct.	— .074 p. ct.
" " Minima.....	67.00	39.00	48.00	39.00 "	+ 7.28 "
" " Mean.....	77.35	66.32	74.61	72.76 "	+ 5.21 "
Number of Clear Days.....	7	6	10	7 2-3 days.	— 7 2-3 days.
Number of Cloudy and Foggy Days	24	25	21	23 1-3 "	+ 7 2-3 "
Number of Rainy Days.....	.....	.....	.. ..	8 "	+ 4 2-3 "
Quantity of Clouds.....	4.1	3.5	3.4	3.7	+ 0.4
Quantity of Rain and Fog.....	.....	.....	.....	0.914.....	+ 0.190 inch.
1st Days and 2d, Force of N. Wind..	12 1.6	10 1.9	8 1.2	10 1.6	+ 4 + 0.5
" " N. E. Wind.	0 0.0	0 0.0	0 0.0	0 0.0	— 2-3 — 0.5
" " E. Wind....	0 0.0	2 1.5	0 0.0	2-3 0.5	— 1-3 — 0.1
" " S. E. Wind..	6 1.8	1 3.0	4 1.5	3 2-3 2.1	— 1 + 0.9
" " S. Wind....	8 1.9	6 1.7	5 1.4	6 1-3 1.7	+ 2 2-3 + 0.4
" " S. W. Wind.	2 1.0	4 2.2	8 1.9	4 2-3 1.7	0.0 + 0.7
" " W. Wind...	1 1.0	4 3.0	3 2.3	2 2-3 2.1	+ 1.0 + 1.3
" " N. W. Wind.	2 1.5	4 3.2	3 1.3	3 1.7	— 5 2-3 + 0.7

Thermometrograph.

	Deg.		Deg.
Highest Reading by day on the 12th	81.00	Mean of all Highest Readings by day.	65.52
Lowest Reading by night on the 29th.....	41.00	Mean of all lowest readings by night.....	49.20
Range of Temperature during month.....	40.00	Mean daily range of Temperature during mo..	16 32

Remarks.—The weather in various parts of the globe, especially in England and northern Europe, has, for some time past, been remarkable for more than the average amount of cold, rain and snow; and its coincidence with certain maximum cycles of solar-spots, as well as magnetic and auroral phenomena, is now attracting the attention of the scientific world, and has given rise to much philosophical sepculation, which may end in important results. Without pretending to say that there is any connection between these meteorological disturbances and physical manifestations, it is an interesting fact, worthy of being added to the record, that we have been visited with unusually frequent appearances of the Aurora Borealis, since that observed in August, 1855, and that the weather also, during the past summer and fall, has been remarkably cool and exceptional. By the table above, it will be seen that the number of rainy days has been considerably more than the average of October, during the last eight years, and with the exception of a single year, (1858) the rain that has fallen this month is greatly in excess. In October, 1858, the rain measured upwards of three inches; but this fell all during one rainy term; whereas, during this October, there have been no less than four several and distinct rainy terms, and the atmosphere has been more or less saturated with moisture during the whole month. Again, prior to August, 1859, but four instances of the aurora are on record; whereas, since that date, there have been witnessed here no less than seven exhibitions of this phenomenon—four of which have occurred since July last, or one every month since then. The last of these was seen on the 17th of the present month. It was first observed at about 8 ½ o'clock, P. M., and continued glimmering until near 12, P. M. In consequence of a dark bank of cumulus clouds in the north, the light was not visible vertically over five degrees; but at one time extended from the east to the west. As usual with auroras, the light would fade frequently, and again revive with increased brilliancy. What may be the portent of these frequent extraordinary occurrences, time alone can tell; certainly, it would seem, judging from present appearances, safe to conclude that with us they are to be considered as precursors of a very cold, rainy winter; at all events, it will be only prudent and wise to prepare accordingly. As yet our rivers have been little affected by the rains. The Sacramento has steadily maintained its low summer grade; and the American, which always responds more promptly to the early rains, has never risen more than two or three inches during any period of the present month.